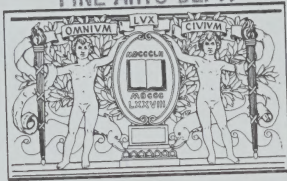
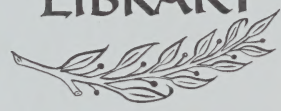


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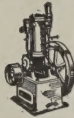
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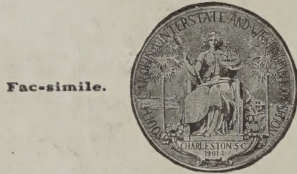
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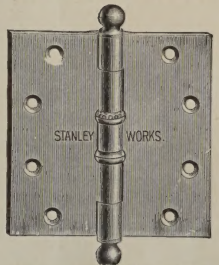
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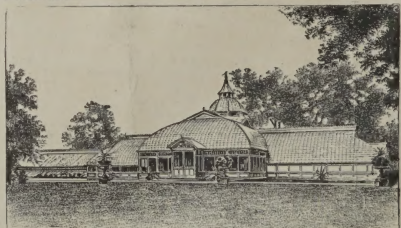
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ENGINE HOUSE No. 31, ELM AND WHITE STREETS, NEW YORK CITY, N. Y.—See page 16.

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MONTHLY COMMENT.

The statement that the premier of Australia has been studying Washington with a view of obtaining ideas on the laying out and construction of a capital city for that commonwealth directs attention to the essential differences which exist between the capitals of the old world and those of the new. The old world capitals are cities of growth, most of them the results of centuries of endeavor. The new world capitals are cities whose site and location are determined by law, and, in most cases, do not coincide with the commercial capitals of their respective states. Boston is the most conspicuous Northern city, perhaps the most conspicuous city we have that is at once the capital and the metropolis. New York with its capital at Albany, Pennsylvania with its capital at Harrisburg, Illinois with its capital at Springfield are all States with arbitrary capitals having only the location of the government at these respective localities to recommend them. The disadvantages of this arrangement have long since been recognized. Commerce naturally finds its own level and finds it quickly. The location of the seat of government at a given spot does not, in modern times, attract commerce to it. Hence it is that the city of New York is more readily reached from every part of the State than Albany, and Harrisburg would be a small interior city with perhaps little interest had not the capital of the State of Pennsylvania been located there. Political conditions render it impossible to change the situations of American capitals now; but the old world system has so many advantages that it must always be a matter of regret we can not pattern our own capitals after them. Australia, it appears, is about to establish a district exclusively under federal control much as the District of Columbia is. It is hardly the best solution of the

capital problem, but in studying the city of Washington the Australian authorities will have before them not only the most beautiful city in America, in a general sense, but one of the most beautiful cities of the world.

CONSPICUOUS announcements have recently appeared in the daily press of a book in which the writer relates the details of his life, one portion of which, at least, has some architectural significance. We are told, among other things, that the gentleman in question "formerly lived in a villa and spent \$2,000.00 a week in maintaining it; now he lives in the Mills Hotel, at a total expenditure of \$3.00 per week." Further on we are advised that he now lives on the top floor of the hotel, "where he occupies a room possibly eight feet long and six feet wide. It has a single bed, a dresser, a tiny table, one chair and half a dozen paper boxes." It is not specified if these remarkable changes in domicile have been caused by a reduction in income or not, but it is seldom that so great a contrast in the ways of living is so clearly stated. Two thousand dollars per week is a sizable sum to spend in keeping up any establishment; and it is, perhaps, not to be wondered that, after a season of such expenditure, some reduction of expenses should be necessary. But the point, however, is not the change this statement indicates, but the total inadequacy of the present method of living. Life under such conditions is not life, but existence, and no one who had not exhausted every possibility of living could content himself with such restrictions. The normal human life requires more than the barest dimensions and more than the simplest necessities. Two thousand dollars a week is too much; \$3.00 a week is too little; there is ample room between these limits for a happy medium.

THE ECCENTRIC HOUSE.

Of all forms of houses the eccentric house is the most to be avoided. Individuality is often a most desirable quality; eccentricity is generally offensive; and the most offensive form is in the house. An eccentric person may be avoided; an eccentric writer need not be read; an eccentric musician need not be heard; but an eccentric house can never be avoided if one is so unfortunate as to reside in the same street. It is not content to keep its eccentricity to itself; it thrusts it out upon the surface of the earth, and there it is, to the undoing of all beholders.

A cheap house is a poor affair, but at least it is modest, or apt to be so. The eccentric house flares forth in all the aggressiveness of modern horror in building. And it must be confessed that the modern capacity for the dreadful in building is not confined within narrow limits. The eccentric house cries aloud for attention; it seeks condemnation; apparently it rejoices in its absurdity. Yet it is truly tragic that there are people who think well of such monstrosities and regard them as very admirable works of art.

An eccentric house needs no other term by which to describe it. It is simply eccentric, and that is the end of it. One does not need a guide to such buildings, for they tell their own tale and bear their own character indelibly marked upon their exteriors. Yet the eccentric house has its admirers, for it is being built. It is quite possible there are people living in such houses that do not know they are eccentric, or, if having such knowledge, do not know they should be abhorred.

It is not necessary to enter into the psychology of the question. Evil of various kinds has its admirers and the evil house is not likely to be without its own special devotees. It is a condition that exists because people do not know a good house from a bad one, or can not tell why one house may be better or worse than another. It may not, however, be useless to briefly glance at some of the elements of eccentricity in building and note some of their effects.

And first of all of roofs. They are fruitful sources of eccentricity. Long, high roofs, short squat roofs, roofs of strange colors, roofs set forth and accentuated with towers, are important elements in giving an eccentric character to a house that otherwise may be quite mild, inoffensive, and even admirable. The household tower—the cottage tower, the tower in a row, the row of towers—is perhaps the utmost freak of domestic architecture. It has been so exploited, used, misused, ridiculed and abominated that it would seem to have no good friend left; yet, like the poor, it is with us always, and a very poor sort it is.

It would, perhaps, be an excellent thing were eccentricity in house building confined to the roof; in that event, when one wearied of it, or became aware of its absurdity, one could slice it off and thus be rid of it. Unfortunately eccentricity can appear in every part of the house and may readily do so. The shapes of the windows, the form of the columns, the style of the porch, the openings of the doors and windows, the detail, the wall, the material—there is not a part of the house on which eccentricity may not set its seal and

where it may not flourish indefinitely. The eccentric roof, in fact, is but a cover to an eccentric dwelling, and hence has a fitness which is not less marked because of its foolishness.

Strangeness of shape, newness of design, the straining of motifs, the search after novelty, all these help in making a house eccentric and in giving it character, which will not only set it apart from other houses, but which, in saner moments, will be deplored by all who may be concerned with it. That strange movement called the "Art Nouveau" is a phase of the eccentric in architecture in so far as it approaches the fantastic.

It is a mistake to assume that every bad house is eccentric. A house is bad because it is bad; and it is eccentric because it is eccentric; but badness and eccentricity are not convertible terms, although every sane person will consider an eccentric house as very bad indeed. An eccentric house—the definition appears needful—is one in which there is a straining for effect; in which parts, details, ornament, dimensions are odd, in which oddity, newness, strangeness is placed above beauty; and in which peace and quiet are unknown. As likely as not it is the last word in architecture, the very newest thing on the face of the earth.

And why is it sought? Beauty is not oddity; beauty is not singularity; beauty is not new, crooked, twisted, misshapen. A work of art is a thing of beauty, and unless it is beautiful it is not a work of art. But a house is a work of art, being of the art architectural; if it is ugly, it ceases to be art; if it is strange or deformed, it bears exactly the same relation to right building as a distorted cripple does to a sound man.

Yet one may build an eccentric house without knowing it; one may have eccentric features in one's house without being alive to their presence. A house that does not suit its locality is surely as eccentric as a human being would be who dressed in an outlandish costume. A house that contains some strange feature—the terrible tower, or the equally terrible turret, for example, or perchance a strangely roofed porch—such a house, while designed with correct taste in other parts, is truly eccentric, because it is not well balanced. There are grades of eccentricity in house building, and their degrees are determined by the intelligence—or the lack of it—with which they are designed.

The individual house should not be confused with the eccentric one. They have nothing in common. A house may be distinctive and individual in the superiority of the taste shown in its design, in the superior quality of its art, in its distinction, in its genuine artistic qualities—but none of these things are eccentric. The individual house is quiet, mild, refined, beautiful. None of these qualities enter into the design of the eccentric house. The individual house contains every element that looks to betterment in architecture; the eccentric house has nothing of this.

If it be true that a man is known by the company he keeps—and there appears to be weighty testimony to that effect—it will mark a distinct advance in ethics when families are known by the houses they inhabit. The one comparison is as good as the other. Should that happy condition arise, there will be fewer eccentric houses than at present, for people will not want to give their character away to every passerby. In some senses there are fewer eccentric houses built to-day than were being built ten or more years ago. The popular taste is improving; people may not know more of architecture than they did, but they realize the more the value of pleasing houses. Meanwhile the architects are being more thoroughly trained. There is less eccentricity in houses as a whole, that is to say in the entire house; but there is still much eccentricity in small parts and in detail. If machine-made detail is not used, it is forthwith designed in a new way and with astonishing results.

As a matter of fact there is so much that is fine, admirable and beautiful in the old architecture—architecture that has stood the wear and tear of centuries, that has withstood transformation and transportation to new and untried conditions, that only a thorough artist and a man of extraordinary designing powers—in fine, the exceptional man—can improve on it and make better new things than the old gives almost without limit.

The eccentric house arose in the search for new things and in the idea that real beauty exists in new shapes, new combinations, new results. One has only to look at the buildings carried out with such ideas to realize their utter folly. The eccentricity from ignorance is, of course, without even these slight excuses for its existence. That it has many manifestations is calamitous, and that it should have admirers reduces the analytic mind to a positively abysmal condition.

The eccentric house is absolutely without any qualification to recommend it. It is not more comfortable, not more inhabitable, not more sanitary, not more economical, not more useful than a house which is not eccentric. It has no reason for existing. It has nothing but its eccentricity to commend it. And that has absolutely no value at all.

TALKS WITH ARCHITECTS

MESSRS. DE LEMOS & CORDES ON THE DEPARTMENT STORE.

"A CITY IN ITSELF" is perhaps the aptest description that has yet been written of a modern Department Store. A single building that, at certain seasons, will require as many as 4,000 employees, and which may, on some days, receive 20,000 visitors on a single floor, is clearly one that requires the utmost care in its design, which necessitates provision for the most varied purposes, and which can only be erected at large cost and on valuable and extended pieces of land. To most persons the Department Store is attractive or convenient as a place in which to make purchases; but the building as a building is a matter of the utmost interest. Months of study and work must be spent upon it before a single purchase can be made in it, and millions of dollars must be invested in the enterprise before even so much as a few cents can be taken in.

The rapid growth of the Department Store has resulted in the creation of an entirely new class of commercial buildings, perhaps the latest and most distinctive of modern structures. One has but to compare the group of old structures at the corner of Fourteenth Street and Sixth Avenue, in New York, with the splendid and palatial new building the same firm has recently moved into, at Broadway and Thirty-fourth Street, to realize how immense are the strides made in a comparatively few years, and how great is the difference between the store of the old type and the new.

Messrs. De Lemos & Cordes have had the singular good fortune to design three of the latest Department Stores in New York, those occupied by the Siegel-Cooper Co., by the Adams Dry Goods Company, and by R. H. Macy & Co. Perhaps it would be better to make the statement in the reverse order, and to remark that three of the largest Department Stores in New York had had the good fortune to command the services of Messrs. De Lemos & Cordes; for the problems involved in the planning and erection of these mammoth structures are so complicated that the problem calls for repeated study. And every architect knows the value of study as interpreted in practise. An architect, therefore, who has been called upon to design more than one of these buildings brings to each succeeding task a fuller realization of the problems involved, a profounder mastery of the difficulties to be overcome, and a broader conception of the whole matter.

"In designing a Department Store," said Mr. Cordes at the beginning of our talk, "the chief problems to be solved are those of delivery, accommodation of employees, safety and convenience of the public, and opportunities for the display and sale of merchandise. The factors may not be stated in their order of merit, but each of these matters presents special problems necessitating individual study and then organic combination."

"Another point," said Mr. De Lemos, "is that the Department Stores are now demanding unbroken floor space. Interior courts, while capable of fine archi-

tectural treatment, and often of the very highest interest architecturally, are regarded as undesirable, not only because of the room they consume, but because in case of fire they are sources of positive danger. Continuous floors are now regarded as the best for buildings of this description.

"Architecturally, of course, that is to say in the matter of design, the problem, while awkward, is practically determined by the uses of the building. The ground floor must be wholly of show windows, and the upper floors must be lighted by series of windows placed in a minimum of wall. The structure apparently stands on a glass base, and I need hardly add that this is the most awkward possible condition for architectural effect."

The Macy store is the latest great Department Store

main front. At the rear is a covered passageway, 80 feet wide, which is used for the delivery of goods, and which brings the delivery wagons wholly within the store and off from the streets, save at the very crowded holiday season, when a portion of the Thirty-fifth Street front is used for this purpose. This feature is possessed by no other Department Store, most of whose deliveries are made on the streets, to the great annoyance of passers-by.

"The space over this passage is largely utilized for the employees. They constitute a most important problem in the planning of the Department Store. They are a small army in themselves, and must have proper locker room, rooms for recreation and lunching and other necessary purposes. They must come and go at the same time, and if as many as 4,000 are employed,

it would take eight elevators about an hour to move them. It was felt unwise to carry them up to the top of the store, and space was assigned to them immediately over the delivery passageway, where they occupy the first mezzanine, the second story, the second mezzanine, and the third story. Every possible convenience has been provided, including shower baths and toilet rooms, and these parts of the building have been fitted up in a very complete manner.

"This plan naturally divides the entire floor space into two parts, the outer portion, which is much the larger, and is given up to the sale of merchandise; and the rear part, the lower stories of which are devoted to the service of the store. These two parts are separated by fireproof partitions, with fireproof doors, so that in the event of a fire originating in one part the other can be instantly closed off from it and used as a fire escape.

"Throughout the whole building the utmost care has been taken in rendering it as safe from fire as modern science will permit. The stairways are practically interior fire escapes, built within fireproof walls, and provided with vestibules having fireproof doors. Not only are the stairs regarded as practically safe, but they afford places of retreat in case of fire. This, of course, is but one of many ways in which the safety of customers and employees

have been considered in this building, every possible care having been taken in every part to insure the utmost safety. It should, perhaps, be added, that the men and women employees enter by separate doors on different streets and have four stairs and six elevators for their exclusive use.

"Another notable feature of the store is the provision for the delivery of goods. The shipping department is in the sub-basement. All goods sold on the first floor and in the basement are taken away by conveyors from the counters to a forty-foot revolving table in the sub-basement. There they are sorted and carried by other conveyors to the special delivery bin in which they belong. There are special conveyors for carrying crockery to the shipping rooms, and endless chain conveyors for the grocery department. Cash rooms have been provided in the basement and on the fourth floor, the pneumatic tube system being used throughout. The

(Continued on page 21.)



THE COUNCIL HALL OF THE COLTHEN RATHAUS.

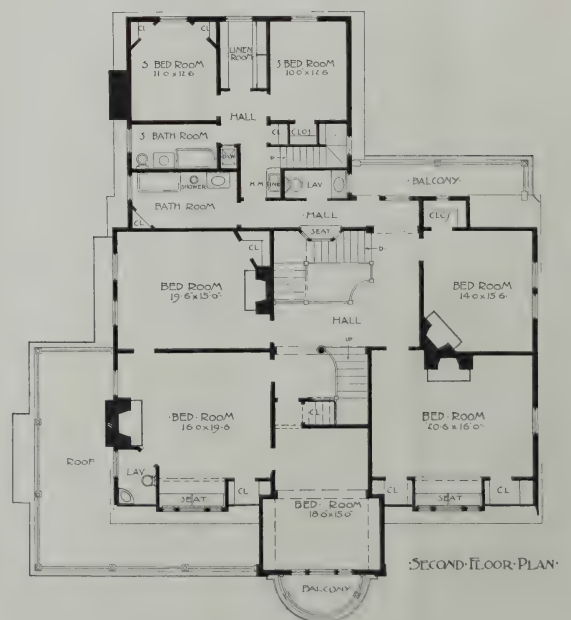
From Blätter für Architektur und Kunsthandwerk.

to be built in New York, and is the latest work in structures of this type. Our talk chiefly centered on it, not only because it has just been finished and occupied, but because it is the fruit of much study and the last of several notable buildings of the same type.

"This store," continued Mr. Cordes, "occupies an entire block of ground with the exception of a small corner lot on the most conspicuous corner."

"Yes," I broke in; "and very cleverly that has been managed, too, and by the simple process of treating it naturally and without effect."

"Everything there," continued Mr. Cordes, "has been retreated, so as to give us ample space for our projections, the whole of the Macy store being built on Macy land. An arcade or public passage behind the corner property forms a continuous passageway, lined with show windows, from Broadway to Thirty-fourth Street. The plan is an elongated trapezoid, with two long parallel lines of unequal length to meet the diagonal



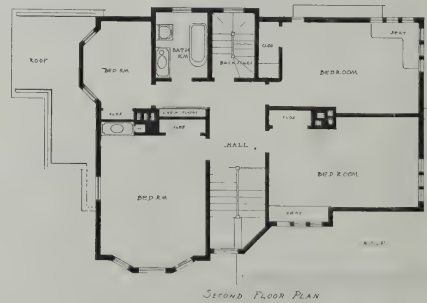
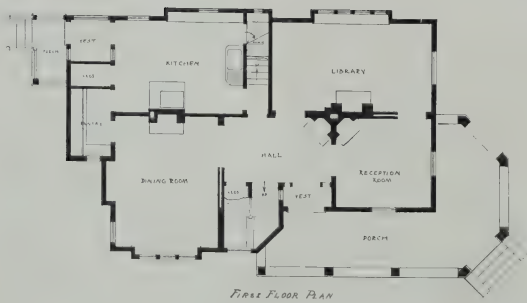
A RESIDENCE AT PLAINFIELD, N. J.—See page 16.

MR. A. L. C. MARSH, ARCHITECT.



A RESIDENCE AT PLAINFIELD, N. J.—See page 16.

MRS. A. L. C. MARSH, ARCHITECT.



A HOUSE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 17.

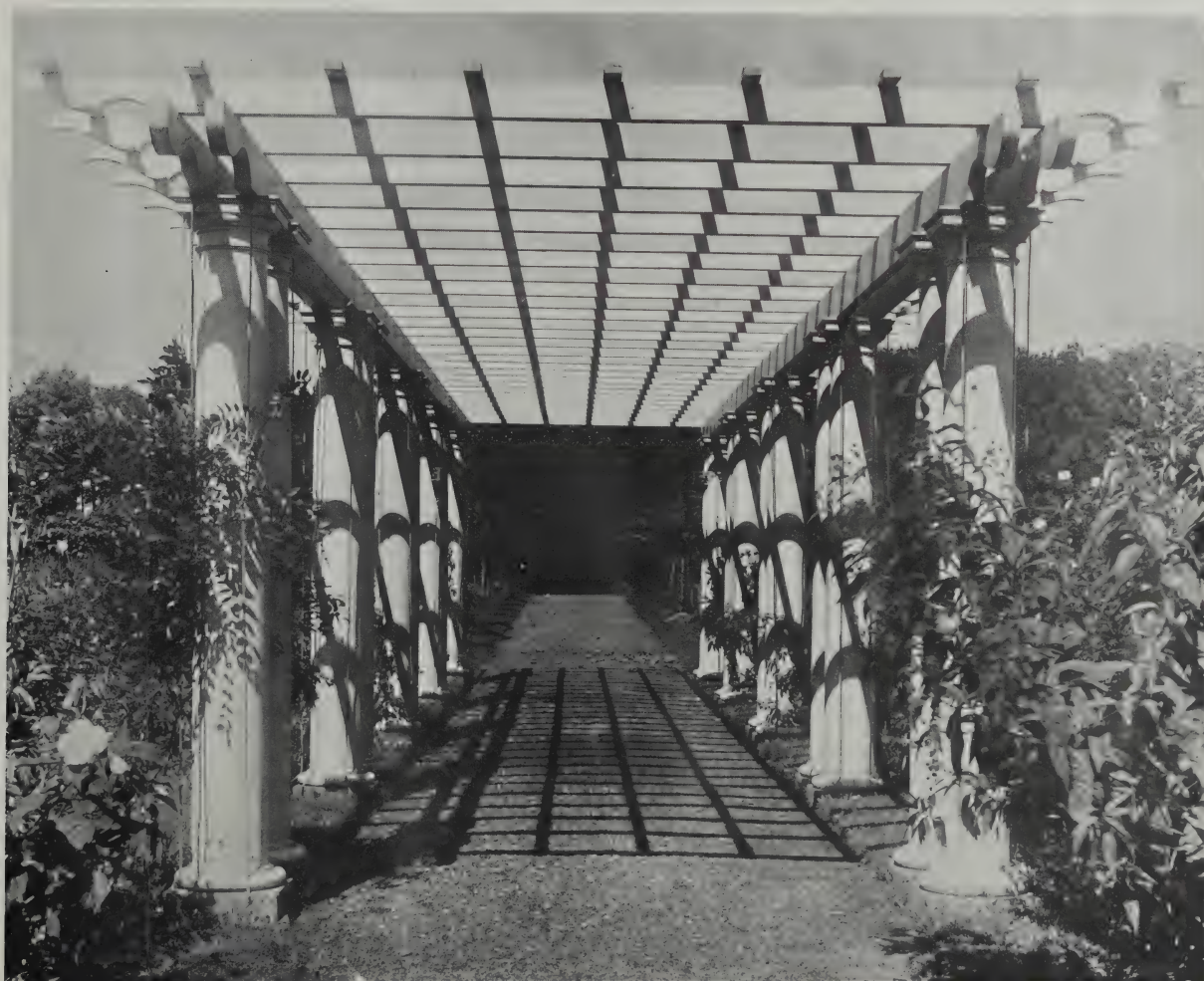
MR. JOHN J. PETIT, ARCHT., "ECT.



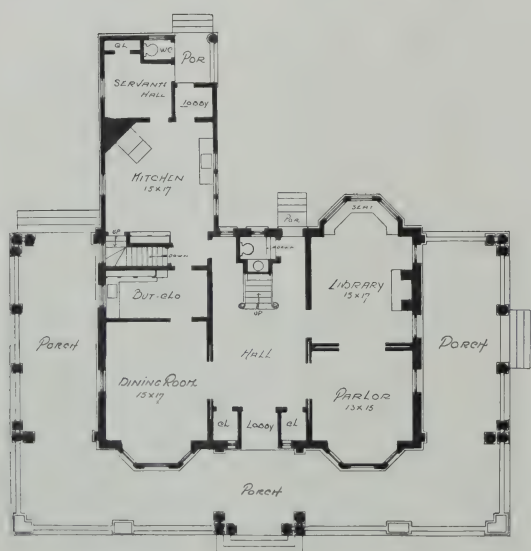
MR. E. C. BENEDICT, GREENWICH, CONN.
MESSRS. CARRÈRE & HASTINGS, ARCHITECTS.



MR. P. V. R. VAN WYCK, PLAINFIELD, N. J.
MR. A. L. C. MARSH, ARCHITECT.

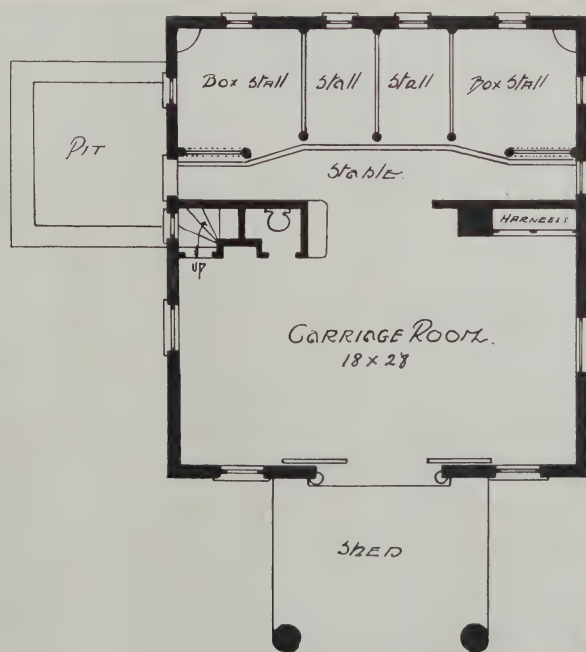


MR. A. M. YOUNG, PINE ORCHARD, CONN.
MR. WILFRED E. GRIFFS, ARCHITECT.



A RESIDENCE AT ELKINS, PA.—See page 19.

MR. LAWRENCE VISSCHER BOYD, ARCHITECT.



GROUND FLOOR

A MODERN STABLE AT ELKINS, PA.—See page 19.

MR. LAWRENCE VISSCHER BOYD, ARCHITECT.



VILLA AT ROCK RIDGE, GREENWICH, CONN.—See page 21.

MR. F. G. C. SMITH, ARCHITECT.



THE DINSMORE ORCHID HOUSE AND GARDEN, STAATSBURG-ON-THE-HUDSON, N. Y.—See page 18.



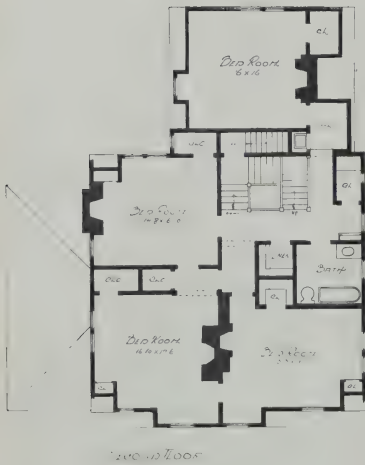
A RESIDENCE AT PALM BEACH, FLA.—See page 17.

MR. WILLIAM L. PRICE, ARCHITECT.



A RESIDENCE AT PALM BEACH, FLA.—See page 17.

MR. WILLIAM L. PRICE, ARCHITECT.



A RESIDENCE AT SOUTH ORANGE, N. J.—See page 18.

MR. ROBERT S. STEPHENSON, ARCHITECT.



BOW WINDOWS—RESIDENCE OF P. V. R. VAN WYCK, ESQ., PLAINFIELD, N. J.—See page 19.

MR. A. L. C. MARSH, ARCHITECT.



THE ORIENTAL ROOM.

THE alarming statement is made by a daily paper that "to be strictly up to date one must have a room where the East breathes forth from every corner." It is to be hoped that this tip is itself out of date and without foundation of proper authority. There is absolutely no reason why any American house should contain an Oriental room, and there is every reason why they should not be universal. One has but to visit the shops that maintain rooms of this description to realize how thoroughly un-American and uncivilized such apartments are. Many really effective pieces of decorative stuffs enter into the ornamentation of such rooms, and that much Oriental art is of the very highest decorative and artistic quality goes without saying. But the average article from the East which finds its way to the American market is sorry art, and there is little to be had of genuine art quality. Apart from this, however, is the undeniable fact that Eastern rooms belong to Eastern civilizations; they are neither American nor modern; why, then, have one, unless one is oneself a barbarian?

DEPARTMENT STORE DECORATIVE ART.

DECORATIVE art as interpreted by decorative objects—vases, plaques, ornaments and objects of like nature—as offered by the department stores is dreary stuff. There is no reason why it should be so, for these great emporiums employ many people to find goods for them, and have facilities for finding products that lesser dealers seldom have. Where the horrors are accumulated is a puzzle; but while they are bad enough to see they are not so depressing when spread out on the store's tables as the thought that people buy these goods and think highly of them. Of course a tableful of tasteless vases or foolish human figures is worse many times than one of these articles set up in a small room; but the generality of these goods is so depressing that leagues to discourage their purchase would be helpful in the cause of good art. Department stores are very commercial affairs, in which the desire to help the people rests on the comfortable basis of profits sure and certain. So long as people buy distressful works of art—so-called—just so long will they be supplied. But there is a wonderful opportunity for good decorative art at moderate prices.

A CONDENSED BATH.

WHAT may, for want of a better term, be called a condensed bath, has been placed on the English market. It is a combination of bath, sink and water heater. The sink is much like an ordinary one, but the closet beneath it contains a movable bath, which can be drawn out into the room, a movable outlet making connection with the drain. Under one end of the sink and over the bath is the water heater, connected with the supply pipe by means of a rubber tube. The water is heated by a gas burner beneath it. This combination has been devised for very small houses not generally supplied with bathrooms.

STONE AND BRICK IN THE HOUSE.

THE employment of uncovered stone, marble or brick in the interior of the house is a questionable expedient that should be used with the utmost care. That these materials are decorative goes without saying, and it is equally true that they can be and are most ornamental. But none of them are suited to northern climates, and they are much too cold for the average northern house. The first aim of a house should be to be comfortable, and no material should be used which detracts from this end in any way. Even the marble mantelpiece has made way for the warmer wooden one.

BAMBOO.

In household furnishing and decoration, says an exchange, the bamboo offers unlimited variety. Thus far it has been employed in this country for picture frames, easels, fancy chairs, and curtain poles. In the Orient the larger sizes, which range from three to twelve inches in diameter, are sawed into various lengths and used for card receivers, sugar bowls, cigar boxes, hand trays, spoon holders, umbrella stands, drinking utensils, and jewel boxes. The larger ones are cut through and sawed with scroll saws into various patterns, which are utilized as jardinières or the holders of pewter boxes, incense cases, and mantel ornaments. When softened by hot water and split into thin strips these can be woven with cord into veranda and window shades, door mats, and hall matings.

A RESIDENCE AT PLAINFIELD, N. J.

WE present on the cover and on pages 4, 5, 7 and 15 a residence of Colonial treatment, which has been erected for P. V. R. Van Wyck, Esq., at Plainfield, New Jersey. The building is designed in a modified Dutch Colonial style. The underpinning and chimneys are built of German Valley stones, which have been in use as fences for many years, and in consequence are covered with moss and lichen. The superstructure is of wood and the exterior framework is covered with clapboards and are painted an old red, while the trimmings are painted white. The roof, which is covered with shingles, is stained a moss green. The exterior details of the house have been modeled after old examples, and the bay windows, which are shown on page 15, present the elaborate finish of the Colonial period. Dimensions: Front, 56 ft.; side, 58 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second story, 9 ft.; third story, 8 ft.

The interior is finished off in a similar style to the exterior and shows much fine detail. The hall is trimmed with pine treated with white enamel, and the doors are of San Domingo mahogany. There is a paneled wainscoting and a massive wooden cornice. The hall is separated from the staircase hall by an arch supported on fluted Ionic columns. The stairway is finished in white enamel with mahogany rail; the detail of balusters being interesting, four different designs being used for each tread. There is an open fireplace in staircase hall built of Roman brick, with the facings and a hearth of the same, and a mantel entirely of mahogany, with the upper panel over shelf provided with the family coat of arms cut in the center.

The parlor is finished with white enamel with high baseboard, and contains a fireplace with Numidian marble facings and hearth and mantel which is a copy of the Wister home of Revolutionary fame. The den is trimmed with chestnut, which is stained black, and contains an old Dutch mantel with Dutch tile facings and hearth imported specially for the work.

The library is treated with white enamel paint, and has mahogany doors, a paneled base, and an open fireplace, with Numidian marble facings and hearth and a mahogany mantel. On either side of the fireplace there are bookcases built in and provided with leaded glass doors. The dining-room is trimmed with quartered white oak, and it has a paneled wainscoting, ceiling beams, a mantel and china cabinets built in, and also a nook for buffet. The butler's pantry is fitted with bowl, drawers, dressers and cupboard. The kitchen and servants' dining-hall are trimmed with pine treated natural, and are furnished with all the best modern conveniences.

The second story is trimmed with pine and is treated with white enamel and is of the Colonial type. There are five bedrooms and a bathroom in the main house, and two servants' bedrooms and bathroom in the extension over the kitchen. The bathrooms have tiled wainscoting and paved floors, and are furnished with porcelain fixtures and exposed nickelplated plumbing.

There is a large well-fitted billiard room, maids' room and a large cedar closet on the third floor. The cellar contains a dark room for photography, drying-room, storerooms, laundry and furnace room. The house is heated by a hot water system and is lighted by electricity. Mr. A. L. C. Marsh, architect, 97 Nassau Street, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

ENGINE HOUSE No. 31, NEW YORK CITY, N. Y.

THE engraving shown on page 1 presents Engine House No. 31, of the New York Fire Department, at Elm and White Streets, New York City, N. Y. The building is a very fine example of the French Renaissance style of Francis I. period, and is the most ornate building of its class in the City of New York. It forms a very happy oasis in its mercantile surroundings. The building is constructed of dressed Indiana limestone and Powhattan brick, which is a grayish brick of the color of the limestone, which makes a most harmonious effect. The dormers in roof are of Indiana limestone and are handsomely carved, while the trimmings throughout are of a similar stone. The roof is covered with blue slate and copper cornice, gutters, etc. The main floor is laid with English klunker brick, and the walls and ceiling are covered with a white enameled brick. This floor contains the water truck, two engines and the fuel depot, which is placed on White Street. The second floor contains the dormitory and bathroom, which are fitted up in the most scientific and sanitary manner. There is a gymnasium and a billiard room on the third floor, trimmed with yellow pine, which is treated natural. Messrs. Le Brun & Sons, architects, Metropolitan Life Building, No. 1 Madison Avenue, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.



PERGOLAS.

THE pergola is now so common a feature of the architectural garden that it would almost seem incomplete without one. Like all excellent devices, it should have a reason in its use, and should not be set up in a garden, however large, unless it fits in with its style and has a definite reason for its introduction. The word is of Italian origin, and means a wooden horizontal trellis supported by columns or posts. The latter may stand free or have an upright trellis between them. The structure is so beautiful, it is such an admirable covering for a favorite walk, it fits in so completely with an elaborate Italian garden that its popularity is readily accounted for. In their most elaborate form they are carefully designed structures, planned and arranged by an architect, who will see that the proportions of the columns are correct and the whole a proper piece of architecture. Less ornate structures are sometimes quite as successful as the pergolas having the mark of the architect. Many old Italian pergolas are solid square stone piers supporting a framework of poles or timber. In England rustic pergolas are sometimes made of larch poles which are supported by stout wooden posts. But, whatever the form, the vines with which they are intended to be covered are an essential part. Pergolas are not built as graceful structures having a beauty of their own alone. They may have that in abundance, and be real works of art, but their real purpose is to support vines, and until they have been well covered with trailing foliage they have not completed their purpose.

The illustrations on page 7 reproduce three recent American pergolas, each of great beauty. The one attached to the residence of E. C. Benedict, Esq., at Greenwich, Conn., was designed by Messrs. Carrère & Hastings, architects, New York. That belonging to the residence of P. V. R. Van Wyck, Esq., at Plainfield, N. J., was designed by Mr. A. L. C. Marsh, architect, New York. The third example, from the residence of A. M. Young, Esq., Pine Orchard, Conn., was designed by Mr. Wilfred E. Griggs, architect, Waterbury, Conn.

GARDENS FOR BOYS AND GIRLS.

Boys and girls who are fond of the garden and of gardening will not wish to "lay down the shovel and the hoe" as soon as spring planting and summer cultivation are over, remarks Home and Flowers. There is work for them all the year round if they would keep up the succession of flowers from the pale snowdrops of March until the witch hazel in October woods waves its last goodbye to summer. Even the interval between October and March need not be flowerless. Florists' windows are crowded with little boxes filled with all manner of mysterious gray and brown and yellow bulbs. Can you resist them? For winter bloom there are hyacinths to be grown in pots or in glasses of water; jonquils and daffodils for deep, rich earth in pots or boxes; Chinese sacred lilies for glass dishes; crocuses, freesias, tulips and other good things, waiting to be hurried into bloom.

THE BOSTON FERN.

THE popularity of the Boston fern, says a recent writer, has been phenomenal. Many florists who were quick to recognize a good thing when they saw it have realized a large amount of money from its cultivation. Several new varieties have been developed by enterprising dealers, which have grown from "sports." One sent out for the first time, the past fall, from a Boston florist, has the name of *Fosteriana*. In it the pinnae have the characteristic division of the large frond, or, in other words, each leaflet is a miniature frond, with leaflets of its own. This gives the plant a most striking appearance. It has a mossy look which will at once attract attention. For grace and general beauty it is predicted that this new fern will bear off the palm. A florist in New York State has also a sport from the Boston fern. It is something like the variety just described, and yet so unlike it in general appearance that it is considered quite distinct, and those who have seen it growing in its owner's greenhouses predict a great popularity for it, as soon as its merits become known.

THE WINTER GARDEN.

The winter garden may not be more than a few pots of flowers or a box at the window, yet it may be the source of as much pleasure as a large conservatory. Plants are more decorative for the house in winter than in summer, when one lives out of doors.



THE SANITARY HOUSE.

ONE of the most valuable papers read at the latest congress of the British Sanitary Institute was by Mr. Louis Hanks on sanitary house decoration. Some excerpts follow:

Sanitary decoration should begin at the top—in the attic if there is one—working downward, cleaning and removing dirt from all recesses and hidden corners. Such places are often overlooked and left as disease spots in a smart house. The attic especially receives the floating dust and impurities in the vitiated air arising from the lower parts of the house; therefore clean it out, remove all dirt, provide that a skylight can be opened, and brush down and whiten every part of the walls, floor, and under-surface of roof, either with limewash or carbolic distemper. Do not leave the open joisting or rough plaster to accumulate more dirt, but put a thin flooring all over the loft and thus gain storage room, which, being lighted and ventilated, will make the whole house healthier. Every scrap of old paper on walls or ceilings, and all old distemper throughout the house, should be soaked, scraped and washed off to the bare plaster, except perhaps in the case of a tightly-hung varnished or painted paper, which already presents an impervious surface. One of the first principles of sanitary decoration is the stripping of walls and ceilings. A disinfectant should be used in the water employed in stripping and washing down the interior of a house, both as a sweetener of the rooms and as a protection for the workmen in case there may have been infectious illness on the premises.

HANGING PAPERS.

In hanging papers, embossed pulp, or canvas materials or painted or varnished surfaces, continued the same speaker, a clairecole of size and soda should be used—half a pound of soda to a gallon of melted size—to give a "bite" to the material to be hung, and to prevent blistering. The clairecole for unpainted surfaces should be melted size with a little whiting and turpentine as aforesaid, no water. Many sanitary, washable distempers or water paints contain a percentage of turpentine, boiled oil, or other vehicles, as well as an admixture of dry white lead, zinc white, or soluble glass, together with some disinfectant. Such truly sanitary pigments can not be too highly commended, as they are cheap, produce artistic and durable effects, and possess better covering properties than oil paint. A hundred pounds of such a distemper will cover eight hundred and forty square yards, while the same quantity of oil paint will only do an average of five hundred square yards.

SANITARY FLOORS AND PAPERS.

The floor, pointed out Mr. Hanks, should be sized and varnished all over, merely having a loose rug, thus providing a thoroughly sanitary surface, which can be kept clean and germ-free without the use of the scrubbing-brush. All open joints should be stopped to prevent dust dropping through into the space beneath. Permanganate of potash is an excellent dark stain for clean floor-boards, and has the additional merit of its disinfecting qualities. The same general principles apply to the decorative treatment of the reception rooms, staircases, etc. Paperhangings, where used, should be, preferably, those with a hard, smooth surface, such as the hot pressed silk fibers or oil printed papers, not flocks nor mica papers, which catch the dust, and whose particles become detached in course of time, thus failing to comply with sanitary requirements.

SANITARY DECORATION.

PAINTED and paneled walls and ceilings, hand-painted decorations in flat-ornament in monochrome, color, or stenciling, with the embellishment of gilding in moldings, and other ornamental details; plaster or compositioned enrichments, hardwood paneled wainscoting, parquet floors, and every kind of decorative treatment that does not afford absorbent surfaces or dust-collecting ridges, shelves or scrolls may be freely employed in entirely sanitary scheme of decoration.

SANITATION AND COST.

A SANITARY house is not necessarily more costly at first hand than an unsanitary one. In the end it is much less costly, for doctor's bills are the most costly of all improvements. In a general way houses are now more sanitary than at any previous time; but an intelligent appreciation of the sanitary necessities of the dwelling is still one of the necessities of modern life.

A HOUSE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

THE engravings shown on page 6 present a house of modern treatment which has been recently erected for John J. Hinchman, Esq., at Prospect Park South, Brooklyn, New York. The foundation is constructed of rock-faced stone laid in good bond, on the top of which a low underpinning of red brick is laid. The superstructure is treated in an unusual manner, for it begins from grade. That part of the exterior from grade to the under side of the first story windows is covered with clapboards, which are painted white; the remainder of the exterior is covered with shingles and is stained a soft brown color. The trimmings are painted white. The roof is covered with shingles and stained in a similar manner with harmonious effect. Dimensions: Front, 46 ft.; side, 29 ft., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

The interior throughout is trimmed with white wood, and an artistic effect is obtained by the harmonious treatment of the various rooms in combination. The hall and vestibule is treated with a forest green effect. It has a paneled wainscoting to the height of the door casings, and the whole finished with a plate rack. The stairs are recessed, and are ornamental in character. There is a leaded window of stained glass on the landing of staircase, which sheds a pleasant light over both the upper and lower halls. The reception-room is treated with white enamel, and has an open fireplace, which is furnished with white enamel, tiled facings and a hearth, and a mantel of Colonial style. The library is treated with an ebony stain which is harmoniously combined with red burlap hangings. It has clusters of small windows with leaded glass effects, a paneled seat, and an open fireplace furnished with Philadelphia pressed brick facings and a hearth, and a mantel shelf.

The dining-room is treated and stained with butter-nut brown. The paneled wainscoting, the tapestry decoration above and the beamed ceiling are the attractive features of this room. The fireplace is built of brick, with the facings and a hearth of the same and a mantel of Dutch design. The butler's pantry is fitted up with drawers, dressers and cupboards complete. The kitchen is trimmed with North Carolina pine, and it has adamant walls and ceiling, and contains, range, sink, pantry and lobby.

The second floor is treated with white enamel, and contains three bedrooms, den and a bathroom. The den is treated with a sea green effect, with Oriental wall decorations. The bathroom has a tiled wainscoting and a paved floor, and is furnished with porcelain fixtures and exposed nickelplated plumbing. There are three bedrooms and a toilet on the third floor. There is a cellar under the entire house, containing a furnace room, coal and wood bins and a laundry complete. Mr. John J. Pettit, architect, 11 East Thirty-third Street, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

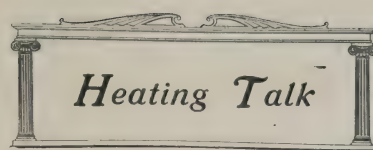
A RESIDENCE AT PALM BEACH, FLA.

THE engravings shown on pages 12 and 13 present a residence erected for John S. Clarke, Esq., at Palm Beach, Florida. The house is built on brick piers, and the superstructure is constructed of wood with the exterior framework covered with matched sheathing and clapboarding, the whole being painted white. The roof is covered with shingles and is stained a moss green. Dimensions: Front, 53 ft.; side, 62 ft., not including piazzas. Height of ceilings: First story, 10 ft.; second, 9 ft.

The interior throughout is trimmed with pine and treated with white enamel paint. The hall is provided with an ornamental staircase with turned newels and square balusters, painted with white enamel, and a rail of mahogany. The parlor and dining-room are furnished with a paneled ceiling, a cluster of windows, in front of which there is provided a paneled seat, and also open fireplaces, built of red brick with the facings and a hearth of the same, and mantels of Colonial style, with shelves supported on columns. The pantry is fitted with drawers, dressers, bowl and closets. The kitchen is separated from the main part of the house by an air space, which forms an isolation of the kitchen and servants' quarters, which are located over the same. There is also a bedroom on this floor, with closet.

The second floor is trimmed in the Colonial style, with white painted door and window trim. This floor contains five bedrooms and two bathrooms, the latter having an enameled-tiled wainscoting, and porcelain fixtures with nickelplated exposed plumbing. A trap door in the upper hall leads to an attic, which provides ample storage room. Mr. William L. Price, architect, 731 Walnut Street, Philadelphia, Pa.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.



FRENCH CHIMNEYS AND STOVES.

THE death of Emile Zola from suffocation a few months ago has concentrated attention on the general inefficiency of the ordinary French systems of heating and the positive dangers which result from imperfect methods. It is now generally admitted, although the facts have long been known, that modern Paris is most inadequately heated, and that even stringent municipal regulations have not prevented dangerous and unsanitary construction. It is not unlikely that the Zola tragedy will result in the carrying out of an effective campaign for bettering these conditions, which have long been an acknowledged scandal in the French capital. The small movable burners and stoves which are in common use throughout France are not only totally inadequate as sources of heat, but are positively dangerous. When to this is added imperfect flues and bad construction it is apparent that the French have much to learn in the matter of domestic heating.

SMOKE PREVENTION.

AN English engineer, who has made a thorough test of the method, pronounces strongly in favor of a new process for the prevention of smoke, known as the "Wilson Smokeless Process." It consists in the injection of a minute quantity of nitrate of soda in solution into the furnace in combination with sufficient air to produce perfect combustion of the gases. Experiments made with some exceedingly soft and dirty coal are described as being entirely successful.

A CURE FOR FROZEN GAS PIPES.

A GERMAN paper describes an effective device for preventing the freezing of gas pipes. It consists in the insertion of a wider piece of pipe where the conduit issues from the ground or wall. For a conduit of a diameter of from three eighths to one-half inch a length of from twenty to thirty centimeters of a pipe one inch in diameter suffices. The deposition of the water particles contained in the gas, which on leaving the works have a temperature of about 50 degrees F., naturally takes place where the gas is subjected to the most abrupt change of temperature—i. e., on its issue from the ground. If the external temperature is sufficiently low, the deposited water immediately congeals and clogs the conduit. As soon as the gas has acquired the temperature of the conduit the deposition of water and congealing cease, and this is said to be the case a short distance beyond the first cooling point. Therefore there should be no congealing beyond the inserted wider piece, and this piece is wide enough to accommodate a thick ice crust and to still leave a free passage for the gas.

SUBSTITUTES FOR COAL.

POPULAR interest in substitutes for coal for use in heating and cooking does not flag, nor is it likely to be lost altogether with a full supply of the usual fuel. The weekly Scientific American summarizes some of the suggestions made for substitutes. One method proposes to convert the natural or dried fibers of grasses, grain, corn, sugar cane, etc., into artificial fuel. The plan is to cook straw or other grasses in a moist heat until the fibers are softened, and then press them into blocks. Another suggestion makes combustible briquet from comminuted coal, coke or other material, molasses being used as a binder. Still another scheme utilizes sawdust, while others go so far as to make use of floor sweepings and the refuse of ash piles. Peat and oil form the foundation of numberless inventions for artificial fuel, while the refuse of the coal mines is the base for other propositions in the fuel line. Inventors have for years endeavored to find some means for utilizing the waste products of the coal mines, called culm, and which consists of a fine coal powder left after the sifting process is completed. It has been contended that fuel can be obtained by treating culm of a quality equal to the best anthracite or bituminous coal and at a cost almost as low as that charged at the mine for the larger product.

THE PRICE OF FUEL.

Now that coal seems steadily advancing in price, the cost of other fuels is going up. This was to have been expected, and that oil should have risen is quite in the order of things. Other fuels may follow. But the main question seems to be something to burn. With many people that is more important than the question of cost. All fuels seem likely to increase in price for some time to come.

House Decoration

MR. LEWIS F. DAY ON HOUSE DECORATION.

MR. LEWIS F. DAY, whose work in decoration is well known and who is one of the most highly appreciated English artists and writers on this subject, has made some thoughtful suggestions in a recent lecture, which is summarized in part below.

There was a time, he said, when all art was decorative. If that was ever so, the times are changed. Decoration is nowadays only a division of art, and house decoration is only a division of that division, and even house decoration is divided into two—into what claims to be entirely an art and a fine art, and into what is content to be a mere matter of business. It is this last subdivision which is to be deplored. There is only one thing more deplorable. Worse than the professional attitude, with its unwarrantable pretensions—worse than the dead level of business practice, which may at least be honest—is the quackery which takes the name of art in vain, using it only to decoy the unwary and to conjure the unearned money out of their pockets.

And neither art nor trade has the monopoly of this kind of quackery. There is, on the one hand, the too cunning tradesman who, as it were, covers over the cracks and flaws in his work with a label describing it as art, and does infinite discredit to the genuine thing; on the other, there is the too artful artist who pretends that his amateurish attempts are the only true form of decoration, and by his absurd pretensions not only puts up the back of practical men but gives to sane people generally the erroneous idea that art is incompatible with common sense. My point is the mischievous severance of the art of decoration from the trade which, if not a comparatively new thing, is certainly more complete than in old days it was.

Art and craftsmanship are inseparable. It is difficult to draw a hard-and-fast line between them, and say here one ends and the other begins. For the moment the consideration of beauty (apart from utility) enters into the calculations of the workman he touches on the domain of art. And it is all but, "if not quite," impossible for a man to carry workmanship to its furthest point without concerning himself about the beauty of his work. As a matter of fact, no man does; and so it is that art and craftsmanship are bound together. But it is quite possible for a man of business to carry on his trade without regard to art; as a matter of fact, the mere man of business not himself a workman usually does.

WHAT ART IS.

What, continued Mr. Day, is "art"? It is the flower of workmanship. To put it less figuratively, it is that something in workmanship which lifts it above mere workmanship—that touch of delicacy or beauty, of individuality or originality, which a man puts into his work, consciously perhaps for his own satisfaction, unconsciously perhaps because he can not help it. It is that which it comes to a man to do—for which reason we call it "inspiration" when it is a great thing that is done. But the same impulse enters into little things, into the most modest decoration as well as into the more ambitious. It is something not to be gauged. It is as subtle as the scent of a flower or the flavor of a fruit. It has no price and is rarely paid for (until a man is famous, and then he reaps the harvest of long years of patience); but whether the artist is paid for it or not, he puts it into his work because he is an artist, and it would be no satisfaction to him if he did not.

A good workman winces at bad work; he does his work well for the love of it. There is the secret of it—the man's liking for his work.

Commercial enterprise takes no account of that, and in proportion as decoration is carried out on strictly business principles it becomes less and less possible for a workman to put his heart into his work, and so to put art into it. It is a mistake to separate a man's trade from his enjoyment and his personality. And why are men ashamed of their shop, except that they do there things they would not do at home? All that is offensive in it should rather be stigmatized as untradesmanlike if we had not come to justify in trade what we should in daily life call mean.

The first step, I take it, toward making house decoration an art is not to be ashamed of it as a trade—to adopt it as a calling in which a man can take an honest pride, one which he does not altogether leave behind him when he leaves the shop, one which is never very far from his thoughts, one which gives scope to his best faculties and does not tempt him from the path of manliness.

A RESIDENCE AT SOUTH ORANGE, N. J.

THE residence which is illustrated on page 14 has been erected for Frank W. Giffin, Esq., at South Orange, New Jersey. The underpinning is built of red brick laid in white mortar. The building above is treated in the half-timber style, with beamed gables, the body and panels being filled in with rough plaster-work, which is treated with a light yellow color, while the trimmings and all the woodwork on the exterior is painted a soft brown. The roof is covered with shingles and is painted a deep red. Dimensions: Front, 37 ft. 4 in.; side, 54 ft. 7 in., not including piazza. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft. 10 in.; second, 9 ft. 5 in.; third, 8 ft. 2 in.

The vestibule forms the entrance to the hall, which is trimmed with black walnut. It contains an attractive stairway, with a newel-post rising to ceiling and supporting a massive beam with plaster effect. This hall has a paneled wainscoting. Parlor and library are separated one from the other by an archway placed at either side of the fireplace. Both of these rooms are treated with ivory-white paint and each is provided with open fireplaces furnished with tiled facings and hearths, and mantels of Colonial style. The dining-room is finished with antique oak, and has a paneled wainscoting, ceiling beams and an open fireplace, built of brick, with the facings and a hearth of the same, and a Gothic mantel. The butlers' pantry is fitted with bowl, drawers, dressers and cupboards complete. The kitchen is provided with a range in the fireplace, a dresser, a sink and a storecloset.

There are four bedrooms, ten closets, linen closet and bathroom on the second floor. The trim on this floor is treated with white enamel. The bathroom is furnished with a tiled floor and wainscoting and porcelain fixtures with exposed plumbing, all nickelplated. There are two bedrooms and a trunk room in the third floor. A cemented cellar contains a furnace room, laundry, servants' closet and coal bins. Mr. Robert S. Stephenson, architect, 1133 Broadway, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

THE DINSMORE ORCHID HOUSE AND GARDEN.

THE orchid is the royal flower, and is produced only by the greatest care and skill of the practical gardener. Its culture has long since been a fad among the wealthy. The best varieties supplied by the merchant and private growers bring from fifty cents to five dollars a flower.

To raise orchids successfully a conservatory is absolutely necessary, for a tropical temperature must be obtained and maintained, and its floor kept moist with water, so the plant may take freely of the moisture at all times, and thus with such proper care and attention a plant may live to attain an age of fifty years and more.

There are two varieties of orchids, viz., the Celestial and the Terrestrial—the former are parasites, and grow upon trees; hence need no soil, but live upon the air. The Terrestrial, on the contrary, must have soil of a sandy nature, as found in their natural element. Of these two species there are many varieties, of which nearly all are found in the extensive conservatories of Mr. Dinsmore, at Staatsburg, N. Y..

Celestial orchids are best grown where trees are not to be had in little log cabins containing a mixture of two-thirds fibrous peat and one-third sphagnum, or moss, placed upon a good course of pots, crocks or broken pottery and charcoal for drainage. The plant must be kept wet, but not overwet, with plenty of light, yet protected from the sun and kept at a temperature of 65 degrees, and never below 60 degrees, Fahrenheit. Of the many varieties there are none richer and more delicate than the grand Cattleya Mossiae, and the delicate Phalaenopsis Schilleriana, which is predominant in the picture here presented. The former is a native of Lagayra, Venezuela. This orchid was first introduced in cultivation in 1836 by a Mrs. Moss, of Liverpool, hence its present name. This orchid is both a spring and summer bloomer, the blossoms lasting five to six weeks. The latter is the most delicate of all orchids and is a native of East India. It is most striking in both flower and leaves. The leaves hang like large cow tongues and are spotted and streaked with purple. The flower is like wax, delicate white and gradually blending into the faintest pink hue, with rich peach blossom colored center. The illustrations on page 11 are from photographs made expressly for the BUILDING MONTHLY.

THE people of New York are comforted, from time to time, by brilliant articles in the public press informing them how far ahead, in point of time, the rapid transit tunnel is. Such announcements give pleasure, no doubt, to several millions of people. It seems, however, somewhat difficult to make them agree with the fact that grass has grown on the sides of the excavations in many places.

The Kitchen

"DON'TS" FOR THE GAS RANGE.

SOME useful suggestions of what not to do with the gas range are printed in a recent number of Good Housekeeping. A few of them follow:

Don't keep any kettle or cooking utensil standing over the simmerer in exactly one spot very long. The simmerer flame is like the goldsmith's flame, boring, boring into the pots and vessels.

Don't forget, if you need hot water for sudden sickness in the night, that four quarts of water over as many burners will heat enough faster than four quarts in one vessel to more than make up for the extra flames.

Don't forget that if it is necessary to hurry bread rising, the oven of the gas range may be used. Light one burner three minutes. Turn it out. Set a pan of steaming water on the bottom of the oven, the bread on the rack above, and this arrangement will do the work.

Don't turn both oven burners on before lighting the pilot or gas match.

ELECTRIC HEATING AND COOKING.

AN electric engineer contributes some notes on electric heating and cooking to Electricity. Generally speaking, a saving is found in connection with those appliances the use of which is intermittent. Under that heading would come the coffee and the tea pots and the various dishes required in the preparation of breakfast or any other meal for which it would not be necessary to maintain a fire during the day. It costs two cents to cook a breakfast by electricity and ten cents to cook a dinner.

In laundry work electric heating is not only economical, but it also imposes much less labor upon the servants and very little heat escapes in the room. Hot water in small quantities is conveniently obtained by an electric heater, and in the dressing-room the hair-curler, heated by electricity, is convenient and cheap. I might mention also the portable plate-warmer, by which the chill is taken off plates quickly by electricity; electric waffle irons, and electric smoothing-irons.

I made an estimate once, the writer continues, that to heat a New York theater by electricity would cost twenty-five per cent. more than by coal at \$5 a ton. In that instance heat was to be supplied from an electric heater under every chair. With coal at the present price the chill can be taken off small rooms more cheaply by electricity than by building a fire; but to heat up whole buildings devices must yet be improved by which electricity can compete in economy with coal, even at present prices of anthracite. Manufacturers in Boston are working overtime in turning out electric heaters.

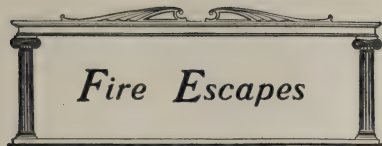
ECONOMY IN COOKING.

At a demonstration of economical methods in cooking, made some time since in New York, the Rev. Dr. George L. McNutt showed how the wife of a poor man can furnish her kitchen with all the needful cooking utensils for the modest sum of \$2.

As a demonstration of his theories regarding an inexpensive nutritious diet, Mr. McNutt had with him a common washbowl and glass fruit jars in which he cooked without perceptible odor over one flame cabbage, onions, peas, apples, eggs, and coffee. The only departure in the washbowl from the ordinary sort was in the cover. That had been fitted with an inside lining of tin, between which and the outside a layer of asbestos was placed.

The vegetables, including the peas in the pods, were soaked for three minutes in boiling salted water, which, Mr. McNutt said, preserved their juices. Each vegetable was then put into a jar with hot, unsalted water. The coffee was placed, unground, in a jar with hot water. The jars were sealed, immersed in hot water in the boiler and allowed to boil for a minute or two. Then the boiler was removed with its contents to an asbestos sheet on the table, and was covered tightly with asbestos. Over the boiler was placed a large wooden soap box, which in turn was wrapped in an infinite number of newspapers. The temperature of the boiler, Mr. McNutt explained, would not fall below 140 degrees in nine hours. Any kind of meat, cereal or vegetable may be cooked in the same manner.

The demonstrator explained that the coffee and cereal for the breakfast were cooked by his wife over the family reading lamp the night before they were wanted.



NEW YORK REGULATIONS.

THE New York building law provides that every dwelling house occupied or built to be occupied by three or more families; buildings more than three stories in height used as hotels or lodging houses, or boarding houses having fifteen bedrooms above the basement; buildings three stories or more in height used as stores or workrooms; factories, mills, manufacturing, workshops, hospitals, asylums, institutions for the care of invalids; buildings used in whole or in part as schools; and every office building more than five stories in height, must be provided with such good and sufficient fire escapes, stairways or other means of egress in case of fire as shall be directed by the Department of Buildings. The Department has authority to direct fire escapes and other means of egress, and owners are required to keep them in good repair and properly painted. Incumbrances of any sort are strictly forbidden upon the fire escape, balconies or ladders. The law also provides for the method of constructing fire escapes.

VIENNA REGULATIONS.

In every new building free communication by means of completely fireproof stairs must exist from the garret and from all departments to the house door respectively to the outside and to the cellar. These conditions require, according to the extent of the building, the construction of one or more fireproof main stairs. These stairs must in one or two-story buildings have a clear width of at least 1.10 meters, and in buildings with more stories at least 1.10 meters in the two upper stories and in the lower ones at least 1.25 meters. In main stairs the straight steps must not be less than 29 centimeters wide, and the width of pointed steps must, at a distance of 40 centimeters from the stair wall, be at least 229 centimeters and at the points at least 13 centimeters. If in a three or four-story building one or more by-stairs exist besides the main stairs, these side stairs may serve as main stairs for the two upper stories if they are constructed of fireproof material, and have a clear width of at least 1.10 meters. The height of the steps must not exceed 16 centimeters in the different stories and 20 centimeters in the cellar and garret stairs. The stairs must be provided with hand rods, and in the free places with railings of at least 1 meter in height. In fliers these railings must be provided with appliances for preventing the sliding down upon the railings. In the staircases suitable devices for the setting down of burdens must be provided; in four-story buildings such devices must be in the first and third stories, and in three-story buildings at least in the first story. In special cases or in public buildings or with monumental stairs the Board of Works may dispense with the obligation of providing these devices and the hand rods. The stair landings, as well as the corridors in the extent of the staircase, must be completely constructed of fireproof material. By-stairs for the connection of certain apartments which are also accessible from the main stairs are not subject to above conditions. The employment of trap-doors (horizontal doors) for stair descents is not permitted.

LONDON REGULATIONS.

By the provisions of the Factory and Workshop Act, 1901, the duty is imposed upon the London County Council of seeing that each factory, workshop or laundry situated within the administrative county of London in which more than forty persons are employed is provided with such means of escape in case of fire for the persons employed therein as can reasonably be required in the circumstances of each case.

Regulations adopted by the London County Council under date of July 22, 1902, contain elaborate rules for protection against fire, in which it is provided that in cases in which external iron staircases are accepted by the Council as means of escape, they must be constructed with dead bearings and without cantilever work. Such staircases must comply with the stated requirements as regards width, going, width of tread, height of risers, doors, handrails, etc. They must deliver into the outer air at the ground level into a public way or thoroughfare or some large open space. Where an iron staircase is in general use the treads must be of approved non-slippery material as distinguished from perforated iron or checkered iron plates. All windows and similar openings by or near any such staircases must be protected with kiln wire, or glazed with a combination of glass and wire or other approved fire-resisting glazing.

A RESIDENCE AT ELKINS, PA.

THE residence which is illustrated on page 8 has been erected for Charles F. Wall, Esq., at Elkins, Pa. The building in design, both the exterior and interior, is of the Colonial style. The underpinning is built of rock-faced, long flat-bedded stone, pointed with wide flat Colonial pointing. The entire building above is constructed of hard brick, pebble-dashed, and tinted a Colonial yellow, while the trimmings are painted ivory white. The roof is covered with cedar shingles left to natural finish. Dimensions: Front, 48 ft.; side, 63 ft., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The interior plan shows a central hall with rooms on either side, and an extension containing the kitchen and its dependencies. Upon entering the house one passes through a Colonial doorway with side lights and a fanlike transom over the same. There is a vestibule, on either side of which are coat closets. The hall, as well as the principal rooms in the first floor, is trimmed with red oak. This hall contains a broad stairway, starting from the center of the main hall, and rising to the landing, thence dividing into right and left stairways to the second floor. On the landing there is a Palladian window lighting first and second floor halls. A toilet is conveniently located under the stairway. The parlor is treated in a delicate manner, and is separated from the library by double sliding doors; the latter is provided with a bay window and paneled seat, and an open fireplace furnished with tiled facings and a hearth and a mantel of Colonial styles. The dining-room is of large dimensions and is provided with a large butler's pantry, which is fitted up with bowl, drawers, cupboards, dressers, etc. The kitchen and servants' dining-hall are trimmed with North Carolina pine and are furnished with all the best modern conveniences.

The second floor bedrooms are finished two in white enamel and two in birch stained mahogany. The den is also finished in birch and stained mahogany, and the room over the kitchen is of chestnut natural. The bathrooms are tiled to the height of five feet with glazed tile, and with white field and colored bands at the top and the bottom. The floor is of vitrified tile, with a neat wall, a Troy border of contrasting color. These bathrooms are furnished with porcelain fixtures and exposed nickelplated plumbing.

The third floor contains three bedrooms, bathroom, billiard room and workshop. The entire woodwork in the third floor is of white pine finished natural. A cellar, cemented, contains a furnace, laundry and other dependencies. Mr. Lawrence Visscher Boyd, architect, Market and Fifteenth Streets, Philadelphia, Pa.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A MODERN STABLE AT ELKINS, PA.

THE engraving on page 9 shows a modern stable which has been built for Mr. Charles F. Wall, at Elkins, Pa. The building has a stone foundation. The superstructure is of stucco, roughly dashed, and tinted a Colonial yellow. The trimmings are painted white. The roof is covered with shingles and left to weather finish. The shed at the entrance way is a convenient feature for a stable.

The carriage room has a wood plank floor laid on sleepers in concrete. The walls and ceiling are covered with plaster, sand finish and tinted. There is a carriage wash in the center connected with drains, and a harness closet provided with glass doors. The walls and ceilings in the stable are ceiled with narrow beaded North Carolina pine. This stable contains two box stalls and two single stalls, provided with the usual ornamental iron fixtures.

The second story contains ample storage room for hay and coachman's quarters. Mr. Lawrence Visscher Boyd, architect, Fifteenth and Market Streets, Philadelphia, Pa.

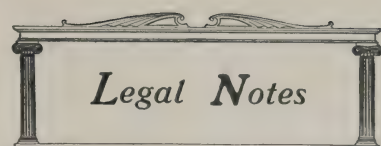
The engravings were made from photographs taken specially for the BUILDING MONTHLY.

BOW WINDOWS.

THE bow, bay or oriel windows, as they are indifferently called, although the words do not express exactly the same features, are among the most useful and beautiful adjuncts of the house. It is true they may sometimes be cold, but that said there is no practical objection to be brought against them. More costly than plain wall, they are admirable means of breaking up surfaces; they add greatly to the pleasantness of rooms, and they are often highly decorative in themselves.

Two interesting examples from recent buildings are illustrated on page 15. They are both from the house of P. V. R. Van Wyck, Esq., at Plainfield, N. J. Mr. A. L. C. Marsh, New York, was the architect.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.



CONTRACT—TIME FOR COMPLETION.

WHERE a contract for the erection of buildings provided that the contractor should have the brick walls ready for the roof in thirty days from the date, and the balance of the work as soon as practicable thereafter, the contract did not prescribe any time within which the work should be finished, as required by Hurd's Rev. St., 1899, p. 1104, Section 6, in order to entitle the contractor to a mechanic's lien therefor. Williams et al. vs. Rittenhouse & Embree Co. et al., 64 N. E. Rep. (Ill.) 995.

ENFORCEMENT OF LIEN.

UNDER Burns' Rev. St., 1901, Section 7259, providing that a person having a mechanic's lien may enforce it by suit within a year, and if it be not enforced within that time it shall be null and void, mortgagees, who are necessary parties, not having been made parties to the action to enforce the lien, may, the year for suit having expired, enjoin sale under the decree foreclosing the lien. Martin et al. vs. Berry, 64 N. E. Rep. (Ind.) 912.

IMPROVEMENTS BY TENANT—LANDLORD'S LIABILITY.

LAWS 1897, c. 418, Section 3, confers on contractors etc., improving real property "with the consent and at the request of the owner thereof" a lien for such improvements. An owner of land leased it to a corporation, the lessee to have the right to remove all buildings, etc., erected by it. Afterward the landlord signed an application to have the premises connected with the city water supply, presumably because of some rule by the city officials. Held, that the landlord was not liable for work done upon buildings erected by the lessee, which was in no way to his interest; since, under the statute, the owner must be an affirmative factor in procuring the improvement, or, having possession and control of the premises, must assent to the improvement in the expectation that it will benefit him. But the landlord was liable for work done in grading the premises at the lessee's instance, but with the landlord's knowledge, before the execution of the lease, and before possession had been given to the lessee. Rice vs. Culver et al., 64 N. E. Rep. (N. Y.) 761.

MATERIAL FURNISHED CONTRACTOR.

AS against a railroad for which a fence is built under contract one furnishing posts therefor to the contractor is entitled to a lien for the value thereof, though the contractor has a set off against him because of their not making extra anchorage unnecessary, as guaranteed. Indiana Ry. Co. vs. Wadsworth et al., 64 N. E. Rep. (Ind.) 938.

SUBCONTRACTOR—RESCISSION.

CLAIMANT contracted with a building contractor to do certain painting for an agreed price, part of which was paid when the work was but partially completed. Before completion the contractor rescinded the contract, and told the claimant to make out his bill. He did so, presented it, was told that it was correct, and given a writing respecting the rescission of the contract, and fixing the amount due him. Claimant testified that he asked the contractors about payment when he presented his bill. Held, that there was a legal demand, and refusal to pay, not subject to the objection that claimant was not entitled to payment at the time the demand was made. South End Imp. Co., of Camden, vs. Harden et al., 52 At. Rep. (N. J.) 1127.

VERBAL CONTRACT—LIENS.

HURD'S Rev. St., 1899, p. 1104, relating to mechanics' liens, etc., provides that, if the work is done or materials are furnished under a verbal contract, no lien shall be had, unless the work shall be done or materials furnished within one year from the date of the contract, and final payment therefor is to be made within such time. Held, that, where a verbal contract did not specify the time for payment, no lien could be had, though the materials were furnished within a year. Hindert et al. vs. American Trust and Savings Bank et al., 64 N. E. Rep. (Ill.) 1008.

SEPARATE BUILDINGS ON CONTIGUOUS LOTS.

WHERE separate buildings have been erected upon contiguous lots under one general contract, a mechanic's lien may be obtained, on proper proceedings, against all of the property, under the Missouri statute. Holland vs. Cunliff et al., 69 S. W. Rep. (Mo.) 737.

THE ATTIC HOMESTEAD.

A PICTURE OF ANCIENT GREEK DOMESTIC LIFE.

XENOPHON traced the rule of the farm on rather general lines; he started from the principle that, in the main, agriculture is made up of common sense and diligence. To critics who blame him as unscientific, I would submit that in Southern farming, at least, these two qualities will carry the cultivator farther than the most beautiful steam-plow. The standpoint from which he viewed the agriculturist was not without elevation, though it did not strike him, as it struck Virgil, that the husbandman was a sort of high priest. But neither did he regard him as the mere servant of private and selfish ends. The landed proprietor was the pillar of Society and agriculture the life-blood of the State; the fields grew more than corn—they grew men. This was his point of view. Cultivating the land becomes a source of pleasure to its possessor, of prosperity to his house, of health to his body which it fits for all the duties of the free man. The Earth gives both the necessities and the charms of life. The lovely and fragrant garlands with which we deck the altars are bestowed by her. She yields a thousand varieties of nourishment; she feeds the war-horse, she toughens the sinews of the soldier. The soil inspires its tillers with the will to die in its defense. How hospitable is the country to its guests! How joyous the blazing fire on the hearth in winter, the cool, shady groves in summer! What more inspiring than a rural religious *fête*? What life is pleasanter for the workers, more delightful for the wife, more salubrious for the children, more generous for friends? The land, which brings forth its increase in proportion to our zeal in cultivating it, teaches the primal law of justice. We learn from husbandry to do to others as we would that they should do unto us. The wise husbandman encourages his laborers not less than a general his soldiers, "for hope is as necessary to slaves as it is to free men."

No writer was ever more sincere; he adorns nothing and speaks from his own experience, which is that of a man of the world who has made no excursions into the clouds. He does not put his own hand to the plow like Tolstoi, but he is a firm believer in the axiom that it is the master's eye which soonest fattens the horse. It is absurd to own an estate and know nothing about its management. Nevertheless, he does not counsel perpetual attention to business; he would have agreed that "no play" makes very dull boys. He looked upon the pleasures of a country life as not less actually profitable than its duties. What was the chase? A nursery for strategists. What was riding across country? A school for cavalry. Four hundred years later the Latin writer on agriculture, Columella, criticized sport as folly and waste of time; Xenophon could not have imagined life in the country without it, but he ennobled the pastime by the skill he brought to it. He aimed at excellence in all he attempted. He was the finest rider of his day, and his little treatise on horsemanship has won the praise of every writer on the subject from then till now. The Attic phrase of "handsome and good" suited him both in its metaphorical and its literal sense, for he was distinctly an "homme du bien," and his good looks were famous.

Besides his love of open-air athletics, he had other Anglo-Saxon characteristics, such as the colonizing instinct joined to affection for home and the taste for adventure without the tastes of the adventurer. But he possessed the defects of his qualities; he had no idealism or "inwardness," the problems of mind did not interest him; he left the Incomprehensible to take care of itself. What interested him in Socrates was the man, and it is the man that he makes known to us. But for Xenophon we might have missed in Socrates that moral perfection which Goethe rated the highest of all—the reverence for those below us. Xenophon's Socrates not only talks affably to all sorts of people; he can actually draw instruction out of them. A country curate complained to Dr. Johnson that his surroundings were unintellectual; his neighbors could only talk of "veals"—the local name for calves. "Sir," replied the doctor, "learn to talk of 'veals'!" Socrates would have thanked him for that word. How gracious he is in the scene of the performing children! How courteously he addresses the showman; how readily he appreciates the cleverness of the little dancing girl! So far from despising the exhibition of a poor little troop of wandering jugglers, he says seriously ("after reflection"), that the child's skill in throwing up and catching her hoops and dancing in time to the music has confirmed a conclusion to which he has been coming for a long time—namely that women are nowise inferior to men save in physical strength and, perhaps, a little, in mental balance. They can learn all things, if properly taught, as quickly and as well as men. When, afterward, the child performs a blood-curdling feat of jumping head downward into a circle of swords, he gently remarks that this is, no doubt, very dangerous, but what possible good is there in it? Is there beauty in contortion? Would it not be less hurtful to the pretty children and more pleasing to the

spectators if they danced to the flute dressed as nymphs or graces? The Sicilian showman, humanized for the moment, as were all who came within Socrates' influence, acts on the hint and improvises the little pantomime with which the banquet ends.

The Greek little girl was happy. She was the pet still more of her father than of her mother. She had dolls with jointed limbs which possessed their proper names, their outfits, their baby-houses and furniture. She played at numberless games, but the favorites were ball and knuckle-bones. A lovely Tanagra figure shows the Greek girl playing at this last universal game, which is also represented as the sport of Niobe's daughters in a well-known fresco found at Pompeii. I am still looking for a part of the world where it is not played; I, myself, once played a match with a gipsy child at Granada and lost it. When the Greek girl reached the mature age of seven she was expected to offer her toys to Artemis, a sacrifice recalled in some pretty lines in the *Anthology*. But I think that the goddess gave back, at least, the ball; a game of ball was recommended by Greek physicians as the best exercise after the bath. Artemis, herself, lives for ever as the eternal girl; following the stag on the mountains and the wild beast along the wind-swept summits, but coming back to lead the dance, beautifully dressed, and not disdainful of feminine tasks; for is she not known as Artemis of the golden distaff?

In Greek marriages, love was post-nuptial; the wooing began with the wedding instead of ending with it. The little bride was very timid, very shy; the first thing to be done was to gain her confidence. Ischomachus prudently did not begin his lectures till the honeymoon was waning. He simply prayed the gods to grant him the wisdom to teach, and his bride the heart to learn all those things that were needed to make their union holy and happy. She joined willingly in the prayer, which he thought a good sign for the future. Then he waited till they had got to know each other and to speak familiarly on different subjects. Even when the schooling begins in earnest, behind the teacher there is still the lover. Nothing flatters a very young girl so much as to speak to her seriously of serious things; for the rest, the wife of Ischomachus would have shown but little wit had she failed to seize what there was of elevated, pure, and true in the picture presented to her of a woman's *role*. The prosaic details and the narrowness of the canvas should not blind us to the fact that the Greek conception of marriage as here set forth, lies at the very root of all Western civilization.

After the interval allowed for "becoming acquainted" Ischomachus asks his wife whether she begins to understand why he married her. She most certainly knew that there would have been no trouble in finding another wife for him, another husband for her. Why did he choose her? why did her parents choose him? Was it not because it appeared to both sides that they were truly fitted for each other, and also fitted to serve the higher objects of matrimony as heads of a household and founders of a new family? If the Divine Powers gave them children they would join to bring them up aright, and the reward would not fail them of having good children to bless their old age. But even now, without waiting for that sacred bond, all they possessed was in common. All that was the wife's she had already given, and now he does the same, he gives her all that is his. It is no more a question of which of the two furnished the most, but it is well to realize that the one who manages best the common store is the one who brings the most valuable contribution to it. "But how can I help? What can I do?" asks the young wife; "you manage everything; my mother only told me that I was to do what was right." Ischomachus says that he received the same advice from his father; but that husband and wife did not do right if they neglected to watch over the property and to improve it. "But how," the wife asks again, "can I help?" Ischomachus says that this is the task marked out for her alike by the gods and by the laws. Each has an allotted share; to the man fall heat and cold, long journeys and wars; to the woman household duties. The first of all of these is the care of children—to which end the gods have implanted in woman's heart an infinite need of loving little creatures. Next comes the care of the household; to point which moral Ischomachus extols the Queen Bee, though a somewhat closer knowledge of natural history would have made him select that far more intelligent house-keeper, the mother-wasp. He develops the idea that marriage is a divine institution in view of the children, a social institution in view of the property. Your duty to God is to bring up your children well; your duty to the State is to foster and not waste your substance. Of course, the conception of thrift as a national virtue is absolutely correct, but its practical application is foreign to English ways of thought. Frugal living and a strict lookout over expenditure suggest a tinge of meanness to the English soul. Ischomachus saw nothing mean in saving, since it enabled him to give nobly to religion, to help his friends in their need, and to contribute munificently to the embellishment of the

city. It would be useless to rehearse all the items of domestic economy which Ischomachus impresses on his docile pupil. She is charged with the care not only of the provisions for the table, but also of the farm produce which is brought to be stored at home or to be employed for spinning and weaving. The counsels of prudence are summed up in the admonition: "To see that we do not spend in a month what ought to last for a year." One piece of advice touches a higher note: "There is another thing," says Ischomachus, "which, perhaps, you will not think very pleasant; it is, that when one of your slaves is ill, you ought to look after him yourself and do all you can for his recovery." "Ah!" she cries, "there is nothing that I shall like to do more than this; they will love me for it." An answer with which Ischomachus was justly delighted and which evoked from him the most beautiful little speech that any husband ever made to any wife: "But the sweetest reward will be when, having become more perfect than I, you have made me your servant; when, as youth and beauty pass, you will not fear to lose your influence, because in growing old you will become a still better companion to me, a better helper to your children, a more honored mistress of your home."

The dominant passion of Xenophon (if we take Ischomachus as his interpreter) was order. He grows lyrical in praise of the beautiful neatness of a man-of-war, and the passage might have been written to-day! This is the model which Ischomachus holds up to his wife for imitation. How admirable is a tidy linen-press or china-closet! Nay, how lovely are symmetrically arranged saucers! Here the author has a suspicion that somebody will laugh, and perhaps he was laughing himself. A young wife wedded to such a martinet must have undergone various bad quarters of an hour; yet, when she is really disturbed at the loss of something that was not in its right place, her mentor made haste to discover that he was himself to blame for it.

The most serious reproach that the wife of Ischomachus ever received was on quite a different score. One morning she appeared with her girlish brow whitened with *Lait d'Iris*, rouge upon her cheeks and a pair of high-heeled shoes on her feet. She was only following the fashion of the day; Athenian ladies, in spite of the seclusion in which they lived, had a perfect mania for cosmetics and gauds; they painted their necks and faces, darkened their eyebrows and wore a profusion of jewels. Self-adornment was even encouraged by the law, which punished any woman who was observed to be carelessly dressed. It has been thought that artificial embellishments became the vogue because real beauty, so common among the men of Athens, was rare among the women. Curiously enough, in modern Athens there are far more handsome men than women, although the most beautiful girls I ever saw were two sisters moving in Athenian society; but their family sprang from the Isle of Paros.

When Ischomachus saw his wife disguised as above described, instead of telling her that she never looked so well (which was what she expected in her poor little heart), he began to ask the most irritating Socratic questions. How would she like it if he brought her a quantity of pinchbeck silver and imitation jewelry? "Oh! do not say such dreadful things," she exclaims. "Could I love you as I do if you were to act like that?" When she sees the gist of his argument, which he pushes home with relentless logic, she takes the lesson in good part and asks what she is to do to really become better looking instead of only seeming so. As an alternative to cosmetics, Ischomachus proposes plenty of exercise, but alas! it is to be all indoors. Running about the house and offices to see that all is right, and lending a hand at kneading the bread, hanging out the clothes, and making the beds. This is the way to get a good complexion and a good appetite, and the maid-servants are encouraged when they see that their mistress is not above joining in their work. So ubiquitous a mistress would not be exactly popular below stairs in a modern house. Women, says Xenophon, are worth very little who are too fine to do anything but sit all day with crossed hands; which is true; still, it might have occurred even to him, that the routine proposed for the wife was cramped and dull compared with the vigorous outdoor life which he assigns to the husband. Ischomachus gets up early, and if he has no business to transact in the town, his groom brings round his horse and leads it before him to his farm (which, we may suppose, was about three miles out of Athens). He walks the distance on foot for the sake of a "constitutional." When he gets to the place, he watches the sowing or reaping or whatever rural task is going on and afterwards he mounts his horse and rides away over hedges and ditches and hills and dales—the sort of country one would cover in war time—never stopping at obstacles, but taking care not to lame the horse if he can help it. On his return, the groom rubs down the horse and then takes it back to the town, carrying with him a basket of whatever farm produce is needed for the kitchen. Ischomachus walks home at a brisk pace and dines, neither too generously nor too meagerly, so that he feels well and active for the rest of the day.—*The Contemporary Review*.



The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

ILLUMINATING TILE. L. J. W. Birn, Chicago, Ill. November 18	713,591
TILE FLOOR CONSTRUCTION. C. F. Buente, Allegheny, Pa. November 18	713,743
BRICK ON STONE MAROONS' GAGE. H. C. Newman, Columbus, Ohio. November 18	713,759

CARPENTRY.

WINDOW FRAME. D. Zatzke, Chicago, Ill. November 4	712,629
WEATHER STRIP. S. P. Ericker, Allegheny, Pa. November 4	712,761
WINDOW. Erickson & Miller, Chicago, Ill. November 4	712,785
WEATHER STRIP. J. A. Chabin, Chicago, Ill. November 11	713,175
WINDOW. O. A. Cantor, Ohio. November 11	713,414
WINDOW FRAME AND SASH. George Schwing, Newark, N. J. November 11	713,508
ROOF BOARD JOINT. W. S. Wickham, Salamanca, N. Y. November 11	713,577
ROOFING. J. Ayrauli, Hamburg, N. Y. November 18	713,588

CONSTRUCTION.

STEEL CONCRETE CONSTRUCTION. C. Weber, St. Louis, Mo. November 4	712,625
TIE BAR. B. Haffner, Maupers, N. J. November 4	712,670
PROCESS OF BUILDING CONCRETE AND MASONRY STRUCTURES. W. C. Parnley, Cleveland, Ohio. November 4	712,841
WEDGE JOINT. Pfeil Broust & Schneider, Wilmersdorf, Germany. November 18	713,679
SECTIONAL COLUMN FOR ARCHITECTURAL PURPOSES. F. A. Spencer, Orange, N. J. November 25	714,251
METALLIC WINDOW FRAME AND SASH. H. A. Streeter, Chicago, Ill. November 25	714,254
LINING FOR CELLS, VAULTS OR THE LIKE. D. E. Youngblood, San Antonio, Texas. November 25	714,249

ELEVATORS.

SAFETY DOORWAY FOR ELEVATOR HATCHWAYS. J. H. Johnson, Newark, N. J. November 11	713,225
SAFETY DEVICE FOR ELEVATORS. R. C. Smith, Yonkers, N. Y. November 18	713,705
ELEVATOR SAFETY DEVICE. A. Tische, Chicago, Ill. November 18	713,718
ELEVATOR OPERATING MECHANISM. Churchill & Christensen, Lynn, Mass. November 25	714,147
WELL DOOR FOR ELEVATORS. W. A. Cross, Chicago, Ill. November 25	714,153

FIRE PROOFING AND FIRE EXTINGUISHMENT.

FIREPROOF BUILDING. H. R. Keithley, Buffalo, N. Y. November 4	712,683
AUTOMATIC FIRE EXTINGUISHER. A. D. Linn, Grand Rapids, Mich. November 4	712,692
PRISMATIC FIREPROOF STRUCTURE. F. L. O. Wade, North, Allegheny, Pa. November 11	713,182
FIREPROOF FLOOR. J. Krolman, New York, N. Y. November 18	713,994
FIREPROOF FLOOR. P. T. Shields, San Antonio, Texas. November 18	714,047
FIREPROOF WINDOW. L. D. Biersach, Milwaukee, Wis. November 25	714,131

HARDWARE.

DOOR OPENING AND CLOSING MECHANISM. J. C. Duner, Chicago, Ill. November 4	712,511
DOOR LATCH. S. M. Morse, Pigeon Cove, Mass. November 4	712,567
COMBINED LOCK AND LATCH. H. A. Schroeder, Baltimore, Md. November 4	712,604
DOUBLE WINDOW AND BLIND FASTENER. W. M. F. Kelly, Montreal, Can. November 4	712,684
LATCH. U. S. Bartholomew, Wyncote, Pa. November 4	712,890
ROOF CLAMP OR BRACKET. I. E. Clum, Lima, Ohio. November 11	713,061
LOCK. O. Stoddard, Detroit, Mich. November 11	713,537
SASH FASTENER. E. M. Comstock, Upsilon, Mich. November 18	713,857
LATCH. S. F. Beckwith, Charleston, W. Va. November 18	713,893
DOOR CHECK. C. P. Sullivan, Boston, Mass. November 25	713,942
AUTOMATIC SASH LOCK. S. G. Wellman, Cory, Pa. November 25	714,255
LOCK. Dalton & Cross, Santo, Texas. November 25	714,343
KNOB ATTACHMENT. S. Fader, Vancouver, Canada. November 25	714,458
GLAZIERS' POINT. T. N. Parker, New York, N. Y. November 25	714,466
SASH HOLDER. H. F. Fildes, Manchester, England. November 25	714,516
	714,569

HEATING AND VENTILATION.

INTERDEPENDENT HEATING AND VENTILATING DEVICE. J. E. Hammond, Portland, Ind. November 18	713,760
FIREPLACES. M. J. Robbins, Chattanooga, Tenn. November 25	714,241

MISCELLANEOUS.

PAINT. W. W. Brasington, Marietta, Ohio. November 18	713,846
SCAFFOLDING. F. M. David, Meadsen, England. November 18	714,101
PAPER HANGING SCAFFOLD. W. D. Rood, Aledo, Ill. November 25	714,520

PLUMBING.

HOT OR COLD WATER FAUCET. P. E. Pierce, Cleveland, Ohio. November 4	713,144
TRAP. E. M. Nichols, New York, N. Y. November 25	714,323
WATER HEATING APPARATUS. J. B. Hall, Toronto, Canada. November 25	714,478

TOOLS.

PLASTERERS' TROWEL. F. F. McCall, Pana, Ill. November 25	714,223
HOE. J. Dorey, Seattle, Wash. November 25	714,287

MESSRS. DE LEMOS & CORDES ON THE DEPARTMENT STORE.

(Continued from page 3.)

money collected in the cash rooms is transferred by automatic conveyors to the main office.

"The problem of storage is a most important one in buildings of this kind. At present ample room is provided for this purpose in the Macy store. The Siegel-Cooper Company long since found their great building too small for them. Expansion was begun by an annex, but recently the fifth floor of that building, which was first used for storage, has been taken up by one of the departments, and a special storage warehouse built outside the store. The Department Store is constantly increasing and constantly needing additional space, and the very largest of them seems, in a few years, to outgrow the most liberal calculations of space. When I tell you that the total floor space in the new Macy store is about one million square feet, it will be apparent how very large such buildings must be.

"One of the most interesting problems we had to deal with," said Mr. De Lemos as our talk drew to a close, "was the building of the store of the Adams Dry Goods Company. That was done without any interruption of business, at least business was carried on constantly. We first built one corner, and then moved around the entire plot, the business of the store preceding us and moving on as fast as we required it to do so. The operation took three years, and involved countless difficulties and vast labor. I might as well frankly confess I was glad when the work was completed."

BARR FERREE.

A VILLA AT "ROCK RIDGE," GREENWICH, CONN.

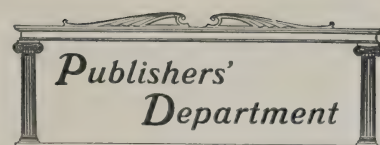
The villa which is presented on page 10 has been erected for Mr. F. G. C. Smith, at "Rock Ridge," Greenwich, Connecticut. The principal characteristic of the exterior is the English treatment, its pointed gables and latticed window effects. The underpinning and balustrade at the piazza are built of rock-faced field stone laid up at random. The building above is of wood, and the outside framework is covered with matched sheathing, good building paper and then shingled with cedar shingles and stained a mustard yellow, while the trimmings are painted a soft brown color. The roof is covered with shingles and stained red. Dimensions: Front, 77 ft.; side, 26 ft., not including piazza and terrace.

The hall is trimmed with whitewood and is stained and finished in mahogany. The entrance hall is separated from the stairway hall by an archway; the latter contains a staircase designed in an unusual manner, with a balustrade of Chinese tiling set into solid panels, the whole of the stairway being treated in China white, except the rail, which is finished in mahogany. The walls of the hall are treated with a two-toned yellow paper. The reception-room is trimmed with pine and is treated with white paint. The walls are covered with an old rose paper, and there is an open fireplace, furnished with facings and a hearth of white enamel tile and a mantel of Colonial style. The living room is an attractive apartment. Its great length is broken by an archway supported on Colonial columns with Ionic capitals. This room is treated with white enamel, and has an open fireplace built of pressed brick, with the facings and a hearth of the same, and a mantel shelf supported on corbel brackets. On either side of fireplace are bookcases built in with latticed doors, and over which there are windows on either side, glazed with leaded glass of a delicate hue of green. The walls are covered with a green matting paper.

The dining-room, extending the entire depth of the house, is trimmed with cypress, which is finished natural. It has an ornamental plate rack extending around the room, paneled seat, and an open fireplace built of brick, with the facings and a hearth of the same, and a mantel. On either side of the fireplace there are china closets built in, with leaded glass doors. The butler's pantry is of unusual dimensions and is furnished with sink, drawers and cupboards complete. The rear stairway to cellar and the second story is conveniently located. The kitchen is fitted up with all the best modern conveniences.

The second floor is trimmed with whitewood and is treated with ivory white paint. This floor contains four bedrooms, with large, well-fitted closets, and two bathrooms, besides two maids' rooms and bath in the extension. The walls in bathroom are of hard finish and are covered throughout with an ornamental tile paper. They are provided with porcelain fixtures and exposed nickelplated plumbing. The third floor contains two guests' rooms and two trunk rooms. A cemented cellar contains steam heater, electric light plant, laundry and coal and wood bins. Mr. F. G. C. Smith, architect, 315 Madison Avenue, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.



RUBEROID ROOFING AT THE TEXAS STATE FAIR.

The Standard Paint Company of New York and Chicago has recently received an order from the managers of the Texas State Fair, Dallas, Texas, for 108,000 square feet of roofing to cover the Exposition buildings. The serious conflagration of last June, in which many buildings were destroyed, threatened the entire property on the grounds with complete loss, but many of the structures were covered with "Ruberoid," and the officials credit this composition with having saved the Fair from ruin, since none of the buildings were burned upon which it was used. To show the value of the "Ruberoid" when covering a large area of extra inflammable material, such as buildings either grouped or separated and not intended for permanent existence, take the statement of Mr. Sydney Smith, the General Manager of the Texas State Fair, sent on August 27 to the Standard Company: "Replying to your inquiry regarding the action of our great fire of June 20, on your roofing, I beg to say that we hardly know how to express to you the good opinion we have of the 'Ruberoid' roofing, because we are satisfied that had it not been that the Auditorium Building was covered with that article, there would have been a total destruction of our Fair. When the Exposition Building was afire, there were showers of burning shingles that fell and lay on the roof of the Auditorium until they literally cooked it, but its non-conducting properties prevented the fire from destroying the sheathing underneath, and consequently it was saved. There is a privilege, pagoda covered with your 'Ruberoid' roofing standing out in front of the Exposition Building, and the flagpole erected through the center of this pagoda caught on fire and burned down through the structure; and the telegraph poles which stood near were burned half away, and still the roof remained and saved the building." This statement of the General Manager furnishes as striking an instance of the fire-resisting qualities of "Ruberoid" roofing as could possibly be desired. It is a conclusive and a repeated proof of the non-conductivity of the covering made by the Standard Company. This material is water, weather, fire, and acid-proof. It is ready to lay, on either a light, temporary building, or on large brick, stone, or iron structures. "Ruberoid" withstands equally well the hot, dry climates of Australia, South Africa, and India, the intense cold of Russia and Alaska, and the soppy condenses prevalent in parts of Holland and China. In a recent Polar expedition, many thousand square feet were used on shelters erected against the icy blasts of the highest latitudes. The extent of the Standard Paint Company's business in "Ruberoid" roofing and P & B products, insulating and sheathing paper, etc., requires main offices in eight foreign cities, and three in this country, one in Chicago, another in Boston, and still another in New York city, at No. 100 William Street.

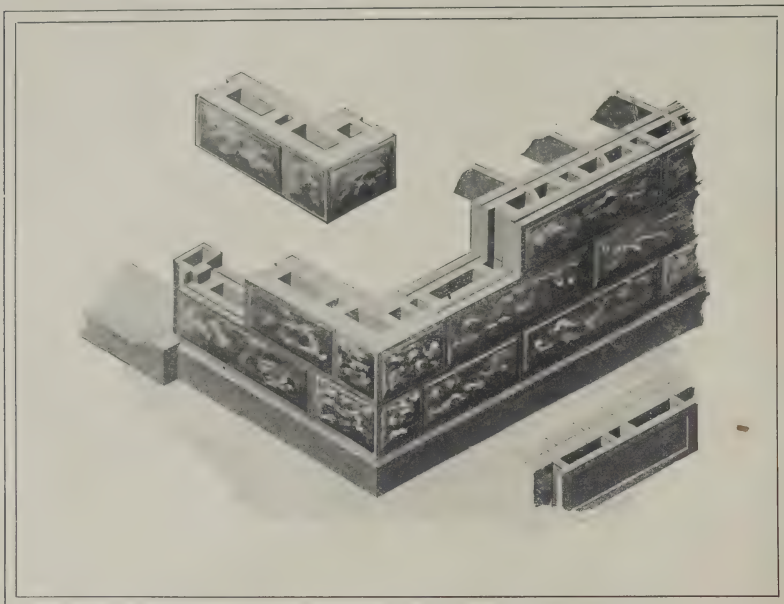
IMPROVEMENT IN BUILDING CONSTRUCTION.

The twenty years' phenomenal growth of the use of Portland cement in buildings has proved its merits. The limits of its possibilities may not yet have been reached, but the strength, durability, variety, beauty, hygiene, and comfort secured in structures reared of hollow building blocks made of this material shows its adaptability to the architectural needs of the world. On realizing the great strength and plastic capacity of this type of concrete, the hollow wall arose in opposition to the necessity of solid masonry. But the advance was step by step, for the first crude and cumbersome method of molding between planks and then building with solid blocks had to be developed into the simple and perfect operation of making hollow blocks, which are now in extensive use and considered indispensable to the complete dwelling; for the vertical fins of hollow walls produce the best ventilation, are non-conductors of heat and cold, and retard the rain and moisture which make walls damp and musty in the outer shell. This operation is the result of the work of a machine now successfully put upon the market, the successor of sixteen different kinds found to be impractical. This device, of which there are now nine sizes, is the invention of Mr. Harmon S. Palmer, of Washington, D. C. Beginning with the eight inch, which size is suitable for one or two story buildings, foundations and partitions, the manufacturers, Harmon S. Palmer & Sons, make ten inch, twelve inch, fifteen inch, sixteen inch, and eighteen inch machines, two chimney block machines adjustable to different sizes, and a sill and lintel machine making stone up to fifty-four

inches in length and anything under. All of the above machines will produce stone of various thicknesses up to thirty-two inches in length and anything under this length, and nine inches high and anything under this height. They all make quarters, halves, three-quarters, belting courses, joist blocks with gables, return corners, bay-window angles, etc. The factory facilities for constructing them are ample. Improvements for the past two years have been added from time to time,

advantages claimed for concrete hollow blocks, it may be stated, that the walls, being lighter than solid walls, require less foundation; the time required for laying these blocks is less than for other material, and there is a saving in the amount of mortar used. Buildings constructed with this concrete become more substantial with age. The most elaborate designs of an architect may be molded into the blocks, thus, in a number of cases, doing away with the use of galvanized iron-

times be cheaper to move some of the machines to where the blocks are to be used and make them on the spot, which can be done as well as at the factory, with the exception of the mixer, and even this is easily transported; the great advantage in the factory building is to work in all kinds of weather, and when it is freezing, steam pipes could be run around the outside. In some cases, where extreme fine quality is desired, as when sand and cement are ground together, the blocks are at once conveyed to a steam chamber, where, after ten or twelve hours, they are quite hard and may be used at once in a structure. If this method were to be employed, a more expensive building would have to be constructed, but this branch is yet in its infancy, and no great proportion of the building will be done in this way. The catalogue of the company is illustrated with colored plates, exposition medals, a large number of figures showing the hollow blocks in various parts and positions, a ten inch size machine, weighing, with designs and equipment belonging to it, seventeen hundred pounds; a large exhibit of structures built of hollow blocks in different parts of the country, such as city dwellings, factories, exchanges, rural homes, besides illustrations of concrete retaining walls, foundations, walls for parks, gardens, etc., and comprehensive opinions with illustrations on concrete construction from the pen of Franklyn W. Smith, the pioneer in this country of building with concrete. Mr. Smith made the first artificial stone in St. Augustine, Florida, and erected the first building there of this material—the Villa Zorayda—which has made the city famous. He is now promoting one of the most splendid conceptions of modern times in a design for National Galleries of History and Art, in Washington, in which he claims that the essentials are that it be, first, imperishable by fire or decay; second, impervious to moisture or vermin; third, independent of external repairs, and that these essential requirements must be found in the nature of the material. Alone to be named for these qualities are; first, concrete; second, brick; third, stone or marble, and experience has demonstrated this to be their order of merit. This architect says that the Commission that investigated the Chicago fire reported the same order for the comparative fireproof qualities of material in the ruins, and that the Boston fire swept streets of granite blocks into ruins, even more quickly than if they had been of wood. Sheets of flame spread over ranges of granite warehouses; slates flew into fragments; the iron beams and girders warped and bent, while the stone blocks crushed, tumbling the so-called fireproof into heaps. With entire confidence Mr. Smith recommends the Palmer's Patent Hollow Concrete Blocks as not only a great national economy, but a beautiful and indestructible contribution to the picturesqueness of American parks, gardens, rural homes, homesteads, farms, and roadways, and he believes that the mechanical appliance in his molding apparatus for blocks is the most facile, expeditious, and economical method of fireproof building yet devised. He hopes, also, that the machine and the material it molds will be employed in the construction of the National Galleries as soon as financial aid makes it possible. The address is Harmon S. Palmer, Hollow Concrete Building Block Co., 1401 Binney Street, Washington, D. C.



HARMON S. PALMER'S HOLLOW CONCRETE BUILDING BLOCKS.

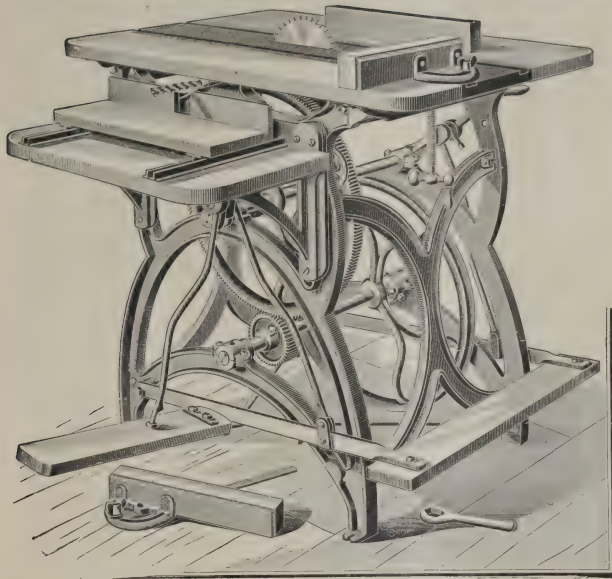
such as shapers, lathes, and planes. A large outlay has been made for jigs and templates, and no apparatus is finished which has not been drilled and fitted by them, so that the new designs and broken parts can be ordered which will fit any machine except the first ones sent out. The productive power, economy, and quality of the work are of the highest order in these little compact machines in turning out twenty-four hundred to three thousand cubic feet in hollow blocks per day of ten hours, an average capacity, with four men, of one hundred and fifty blocks per day, each block equal to forty bricks. All the ornamentation needed to be given to the blocks can be added with little cost, and any color can be made either through the whole block or simply the face to any thickness; they can also be made to pattern, either solid or hollow, for steel construction, the flanges adapted to fit the upright iron post, completely hiding the same, or with the reveal forming panels of any desired style. There is no danger, when properly made, of building too high with them. A block tested by the New York University stood a strain sufficient to sustain a wall of these blocks thirteen hundred feet high. In the illustration inserted here, the small figure at the top shows a plain corner block, with a long and a short end, which, alternately laid in a wall, produces a perfect bond. The lower figures represent the general construction of a concrete wall. The blocks, as the engraving shows, are made with one-third of the interior open space, and are joined so as to form continuous vertical flues from the bottom to the top of the wall. The stones in the wall can be copied after natural stone, and made to give an exact reproduction of any style, plain or rough face, decorated surface, chiseled margin, or any combination to suit the taste of the builder. The extreme simplicity of the process enables the most elaborate designs to be brought out with all the richness and distinctive features permissible to the artist's chisel, at no greater expense than a plain block. Uncolored artificial stone makes so near an imitation of gray stone that close inspection is necessary to distinguish it from natural stone, and the ready susceptibility of the mixture will receive any color or tint except white. All the hues of the most expensive stone or marble may be reproduced, while its lasting properties are equal to granite itself. The hollow interiors shown in the illustration insure greater strength in proportion to the material used than can be obtained in the solid form, and with such walls the expense for lathing can be entirely avoided, since a cement or plaster coat can be applied directly. The modern builder need only have attention called to the facts that concrete walls are absolutely fire, water, frost, and vermin proof; that they need neither paint nor repairs, and that when built of these blocks economy is assured. Of other ad-

work. They require no backing of bricks, and when the hollow block is laid the wall is complete inside and out, and carries the floors, joists, beams, and roofs. The hollow space affords facilities for inserting gas and water pipes, electric wires, speaking tubes, ventilators, etc. The next plate shows a building in course of erection at Indianapolis, Indiana. It is built entirely with hollow building blocks of artificial stone made by the Palmer scientifically and geometrically constructed molding machine. The company intend to greatly enlarge the business by building many additional machines and plants. An average plant will turn out twelve hundred blocks per day, equal to fifty thousand bricks, and these blocks, which take the place of forty-two bricks, are nine inches high, ten inches thick, thirty-two inches long, and different sizes in proportion. The above plant would consist of sufficient machines to make twelve hundred blocks, buildings, land, mixer, gasoline engine, and everything complete. As the freight on the blocks is equal to brick, it will some-



BUILDING OF HOLLOW CONCRETE BLOCKS IN COURSE OF ERECTION AT INDIANAPOLIS.

MARSTONS' HAND & FOOT POWER CIRCULAR SAW.



Iron Frame, 36 inches high.

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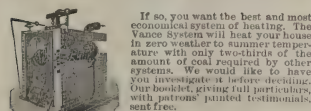
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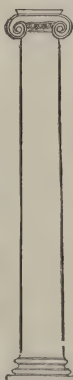
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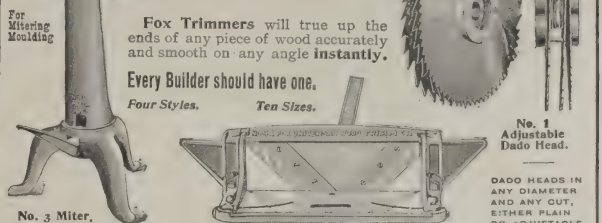


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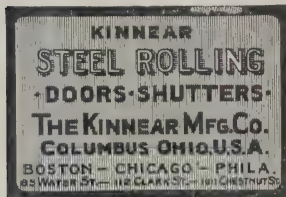
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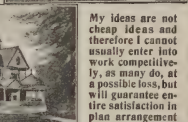
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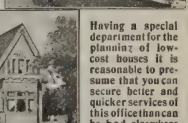
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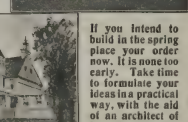
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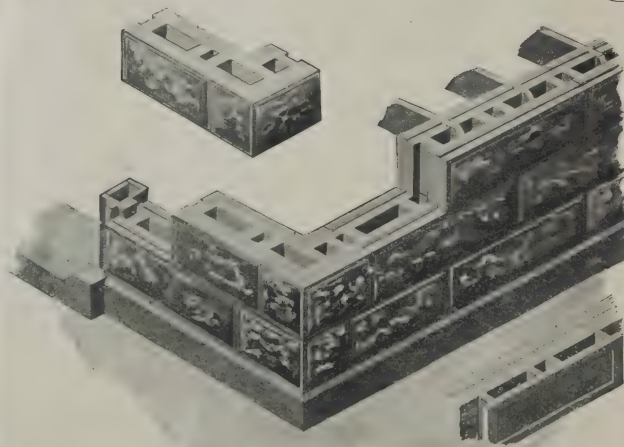
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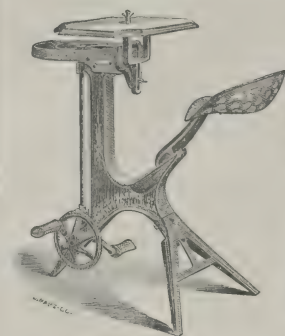
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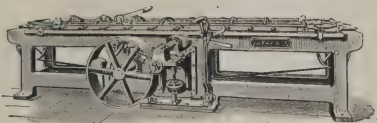
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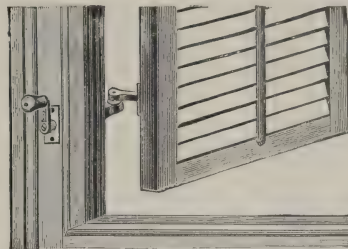
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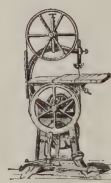
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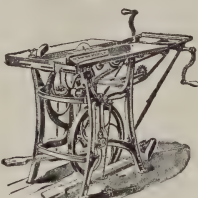
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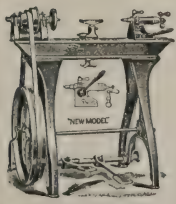
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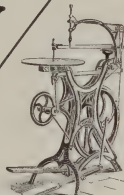
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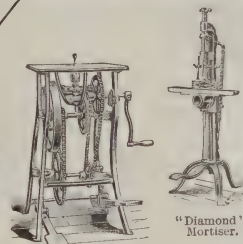
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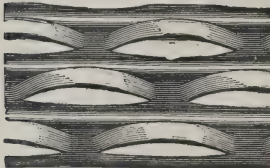
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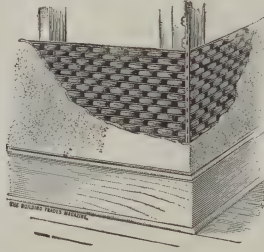
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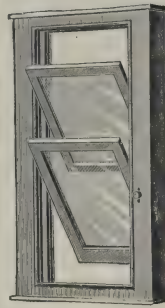
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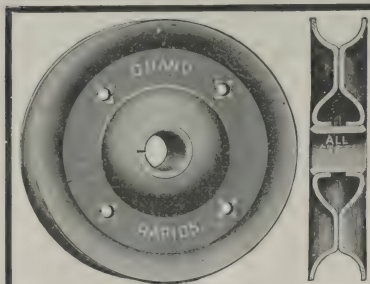
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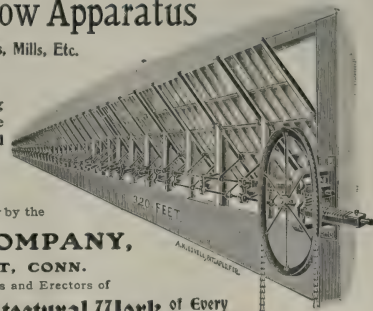
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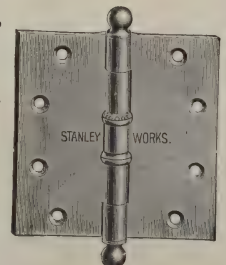
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ENTRANCE HALL—A HOUSE AT SOUTH ORANGE, N. J.—See page 43.

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MONTHLY COMMENT.

The selection of materials is one of the most important elements in building construction. And this is true whether the question considered is in relation to the kind of material or the quality. Every specification drawn up by an honest architect specifies materials of the best quality, and even in flimsy building a certain amount of excellence is required. But the question of quality is one that can only be determined by the architect, as he is a specialist in building materials by profession and by training. The selection of the kind of material is a matter in which the owner can often have an intelligent word to say. It is well to remember, however, that not every design will build up well in every sort of material. An architect designing a brick house will consider his material in his work, and, quite as completely, design in wood if that material will be used. Different sorts of brick, as well as different kinds of wood, will seriously affect the appearance of any design, and may be the one element which turns success to failure. A house must be designed for its material.

A HOUSE that "sparkles as if jewel studded" is one of the latest novelties reported from California. It is said the result has been obtained by very simple means. The house is a wooden structure and the exterior, by sanding, is given the appearance of having a brown or sandstone facing. The workmen, to get the jewel effect, crush the finest of blown glass together with the sand, and, while the wooden exterior is still damp with paint, the combination of glass and sand is thrown on to the surface, and the effect is ob-

tained of stone and sparkling facing. It seems hardly necessary to add that when the sun shines the effect is very brilliant.

YET why should a house insist on being seen? That is the strange feature in much modern house designing. The quiet, retiring sort of house, that is home-like and comfortable, that seems built for the within instead of the without, is by no means the frequent structure it ought to be. There are, of course, many ways of designing a house so it may be seen; the "sparkling" house is only the latest method. It may have the merit of novelty, but surely there is nothing to commend it.

CONSIDERABLE interest has been manifested over the proposed establishment of a department of physical education and school hygiene in the Teachers' College in New York, and the suggestion to establish a professional course for teaching physical education in the elementary and secondary schools. The scheme is, indeed, fundamental, for the preservation of life and health and the bettering of the conditions of living are at the base of modern life. That the period of school life is the time at which ideas are to be planted, leaving to a later period their application and development, is now generally admitted by leading pedagogists throughout the world. There is, of course, some danger in overloading the elementary courses, of giving the child too many things to think of, too many things to learn. Some risks, however, appear needful. It is at least evident that anything that tends to a better knowledge of the sanitary and healthful life should be encouraged, and this proposed new departure may result in many beneficial results.

SUBURBAN EXPANSION.

THE question of transportation is alone keeping the people residents within the cities. It may be an exaggeration to say that the larger number of city inhabitants have discovered that a better, more wholesome, and more human life can be lived in the country than in the city, but it is at least well established that very many have found, in the suburbs, the solution of the problem of living.

The significant fact in the present expansion countryward is that it involves many persons of moderate means. The time is not far distant when to live in the country meant a large expenditure. A considerable country place had to be kept up; men hired to care for it; a stable and its appurtenances were viewed as indispensable adjuncts; and a location some distance from the city seemed to be essential to the obtaining of that quiet rural solitude which was viewed as one of the characteristics—attractions, if you please—of country living.

The modern suburban system has changed all this. The large country place is still with us, but has grown in size and splendor; it has increased in cost; it is supplied with many conveniences, necessities, and delights to which the older houses of a corresponding rank were utter strangers; more rich people live in the country than ever before, and they maintain more places; for the rich man with a single country house is almost marked for peculiarity. There has been a great expansion in cost in country living, and yet more people are paying larger bills than ever before.

But the citizen of moderate means has his innings in the present day, while he was scarcely heard of for longer time than two weeks in the country under the old system. He has gone out into the suburbs and made them his own; he has reached out into the country and has made his abiding place in districts which, but a few years back, he only knew by name. Cities have grown and thriven in a truly imperial way whenever adjacent lands have been available. He has gone out upon the earth and found it good and settled himself permanently upon it.

The causes that have produced this result are very obvious. First and foremost is the vastly increased betterment of the transportation service which is now characteristic of all cities and towns, even small ones. The trolley has almost revolutionized suburban living, and it has certainly opened up great tracts of land that were long inaccessible and only available for farming purposes. The moment people found that they could get to agreeable suburban spots in about the same time that they could reach a distant city residence, the boom of the suburban land owners was determined. No trolley system has yet been devised that gives perfect satisfaction to every one, and perhaps none ever will be devised, for it is human to be dissatisfied, and the number of people who, not being in the transportation business thoroughly understand it, is very considerable. But if the present great results have been accomplished with the admittedly imperfect systems with which most of us must be content, it is evident that, with greatly improved service, the cities might be wholly deserted, and the entire countryside overrun with happy suburbanites.

Another notable cause in suburban expansion has been the comparative cheapness of homes. An average suburban house costs less than an average city house, and largely because the land is less valuable. The country house can be built of wood, while the city house in all large cities must be of brick or stone. The advantages of house owning have been preached so successfully of late years that with many people it is a consuming ambition. Statistics have not yet established whether it has all the merits claimed for it or not, but it is a very popular notion, and has helped on the suburban cause enormously, because it is the suburbs that supply the houses at moderate cost.

All other causes sink into comparative insignificance compared with the two principal ones just cited. The boon of pure air, of quiet nights, of peaceful days and calm existence, while helpful in themselves, would not act as incentives were transportation difficult or the price of land high. The suburbs, moreover, are not especially attractive to the very well-to-do. They have always been able to live in the country when they wished to do so, and are not especially concerned with questions of transportation and cost. But the men and women of moderate means fly to the suburbs as to spots of refuge. Here is their release from the sordid conditions of city life. Here they find a respite and joy that they have never known before. They are the people of the suburbs. They make the suburbs; they live in them; the suburbs exist for them.

And in this lies both the strength and the weakness of the suburbs. They give strength to the movement, because the number of such persons appears to be almost inexhaustible. That there are always people ready to buy or rent houses in the suburbs is a good thing for the landowner who has some fragments of the earth's surface he has no use for; but it is not necessarily a good thing for the suburb. The modern suburb is made up of many kinds of people, a good many—perhaps the larger number—are interested in nothing at all except their own personal lives and perhaps their own personal house.

Suburban living implies a much greater community of interests than city life. The suburbanite who does not know his next door neighbors is a marked man, whose existence is soon rendered uncomfortable. In the city one is not expected to necessarily know his next door neighbor, and the inhabitant of a large apartment house who set out to know all his fellow-sojourners beneath their common roof would be regarded as an exceedingly undesirable tenant.

The social aspects of suburban life are often peculiar and sometimes oppressive, but they are not of so great an importance in themselves as the relationship of the suburbanite to the suburb. A successful suburb implies a community of interests whose intensity is directly proportionate to the success of the district. The wants and needs of suburbanites are largely similar. The conveniences and necessities of one are the conveniences and necessities of the others. Cooperation and community of interest will accomplish more than individual effort, and much might be gained by suburban regions by concerted action along lines of common usefulness.

And then, there is the suburb itself and its general state and betterment. A suburb, like a city, is never done in the making, even if all the houses be sold and no vacancies are to be had at any price. A successful suburb must be kept at the top notch of external appearances. Streets must be properly paved and cleaned; lawns kept in good repair; sidewalks maintained, trees and plants in the public grounds kept in the best possible condition. None of these things can be done without cost, and the property owners are the ones who must meet the expense.

Too often the unsuccessful suburb owes its decadence to the neglect of just these public matters. It is not sufficient that the roadway be good enough; it must be of the best. It is not sufficient to have a few trees; every street should be lined with them and the best possible care taken of them. The landlord or promoter or proprietor loses interest, and loses it naturally, the moment his financial interest in the land passes to others. He can not be expected to exercise a personal oversight over his ancestral fields—as often they are—for an indefinite period. His responsibility naturally comes to an end some time. But the purchaser never loses his interest while he lives on his property or while he owns it. Lessen that interest, lessen the cost of betterments, and the place soon becomes a serious loss to all concerned.

It is a singular fact that while the expansion of suburbs is a very recent growth, hardly a city but can show many a suburban spot that has started off well, but which failed in development. The reason is not far to seek, for in most cases it happened through a failure to perpetuate interest in the locality. The new proprietors either did not find the place as pleasant as they hoped, or they failed to realize their own personal responsibility in helping to maintain the value of their own property while helping their neighbors to retain theirs.

TALKS WITH ARCHITECTS

MR. RICHARD H. HUNT ON BILTMORE.

It was quite natural to speak of Biltmore to Mr. Hunt, for while it is one of the last and most important works of his father, the late Richard Morris Hunt, the latter never saw it completed, and the younger man has been closely identified with it from the time of the elder's death. And, it was natural, too, to speak of Biltmore to the architect who completed it, for it is by all odds the most splendid country house in America, a true "seat," built on the largest scale, and placed in the center of a vast estate, as such a house should be. Of all the great houses in America it alone has no rivals, neither close at hand nor elsewhere, and it stands alone on a spur of a hill overlooking the French Broad River, a stately, splendid château, a house of the first rank in size, in cost, and in art. And there is the third reason for speaking of Biltmore, for the qualities of size and cost are qualities that many other houses have, and are qualities which can always be had; but the artistic characteristics of this beautiful house are of the highest order. It is, in short, a masterpiece of art as well as a masterpiece of housemaking.

And so, as we talked, we drifted to Biltmore, not, indeed, as the latest of Mr. Hunt's works—for the great new wing of his magnificent Metropolitan Museum of Art had but just been thrown open to the

park contains thirty-eight miles of macadamized drives, seventy of wagon road, and two hundred and sixty-five miles of trails in the forests is to express more than commonplace facts, but offers a guide to determining the scale of the property."

"But how," I queried, "is this enormous territory cared for? Is it one great park, laid out as one naturally thinks of a park as laid out, with spots of nature left untouched between stretches of artificial beauty?"

"Not at all," replied Mr. Hunt; "Biltmore comprises two parts, the home grounds and the estate. The home grounds are in the immediate vicinity of the house, as the name implies, and they have been treated with much elaboration of detail, with terraces and gardens, and gardens again, descending down the slopes and including among other interesting features, an old English garden, with fruit trees trained against the walls, a fascinating spot and a truly delightful one."

"As for the estate, that is quite a different matter. Here nature is still nature, and perhaps will always be so. The area is much too large to ever be reduced to formal treatment, and much of it would lose its present grandeur if subjected to cultivation. As a matter of fact the future of Biltmore will be a matter of development. Mr. Vanderbilt, as is well known, is deeply interested in arboriculture, and has already established an arboretum which ranks among the

encomiums at this day, and yet I do not think that one can view this house, or review photographs of it without a fresh realization of the real genius of the man who created this magnificent dwelling."

"Mr. Hunt built many remarkable buildings throughout his long career, but it was surely an exceedingly fortunate circumstance which brought him, as the crowning of his life work, two such notable dwellings as Col. and Mrs. Astor's houses in New York and Mr. Vanderbilt's seat at Biltmore. I except the new part of the Metropolitan Museum of Art, as he did not live to erect it. But these two houses not only sum up all the creative genius of Mr. Hunt, but represent the furthest development yet attained of house design in this country. One does not compare them save as the product of one mind, for the qualities of the city house necessarily differ widely from the qualities of the country house. But the opportunities that came to one man to build two such important dwellings at about the same time are rare and quite as unusual as these dwellings are in their art quality."

"Biltmore suggests, but does not reproduce, historic models. That is, to my mind, the finest quality of Mr. Hunt's latest work. It employs historic ideas and familiar motifs, but it employs them as the great architects of the great periods of architecture have done as the models and tools at hand. Just as each Gothic church and each Renaissance palace is a distinct and individual composition, although using



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GRAND ENTRANCE OF THE REMODELED WHITE HOUSE.—See page 42.

public—but as a building standing in a class by itself, and endowed with all that interest which the public takes in great works, whether they be works of art or works of utility.

"The house at Biltmore," said Mr. Hunt, "stands on a spur of a hill which has been leveled to make space for it. It commands what is surely one of the most magnificent views in the world, a succession of hills and valleys and rolling country of almost limitless extent, reaching as far as the eye can see, stretching indefinitely off into a region filled with beautiful spots and with suggestions of other beauties, unseen, yet suggested."

"This is the supreme attraction of Biltmore—the wonderful scenery of the place and the exceedingly happy way in which Mr. Richard M. Hunt, the architect, Mr. Frederick Law Olmsted, the landscape architect, and Mr. George W. Vanderbilt, the owner, agreed in selecting the very site of all others that is best suited for the house, a site that at once commands the loveliest views and gives it, as a dwelling, the best possible situation and the greatest advantage."

"The circumstances that led to the foundation of this great estate are well known. Mr. Vanderbilt was attracted to it by its wonderful scenery and fine climate. The accumulation of land proceeded at a rapid rate, until now the estate comprises an area of 147,000 acres. Statistics are uninteresting and perhaps of little value, and yet unless the size of this great property is realized its very unusual character will not be comprehended. To say, therefore, that the

most extensive in the world. Here forest culture is carried out on the largest scale yet attempted in this country; a school of forestry is in active operation, and many valuable results have already been obtained."

"And in this lies one of the chief characteristics of this estate: its vast size enables most extensive experiments in plant and tree life to be carried out on it. These experiments all have an economic value, for the owner's idea is not to experiment for the sake of experimenting, but to obtain results of positive value that will be helpful not alone to the management of this property, but which will be available to landowners and land cultivators throughout the entire country. Much has already been done in these directions, and much more will doubtless be done. But it is a notable fact that this great estate is not kept up as a place of pure enjoyment for the cultivated gentleman who owns it, but it is intended to be, if I may so speak, as a great, practical college in agriculture and forestry. And so it is that while planned as a private, personal estate, it has already become a national institution whose value to the country at large increases each year."

"As to the house I feel I may speak rather freely, as it was designed by my father. A good deal has been said of it and a good deal has been written of it. I may safely leave to others the expression of opinion as to its architectural merits."

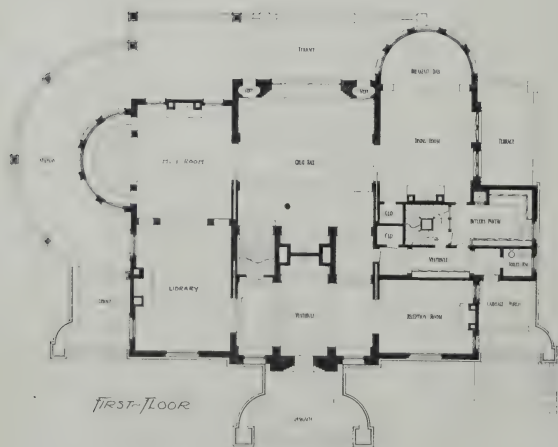
"Let me have a word here, Mr. Hunt, if you please," I interrupted. "There can not be room for any two opinions on this point. The house is great, great in art as well as in size. Mr. Richard M. Hunt needs no

motifs familiar to every one, and most of all to the designers of those times, so Mr. Hunt employed the most beautiful ideas he knew, but employed them afresh and in his own way."

"The open stairway at Biltmore recalls, as it was doubtless intended to recall, the great stair at Blois; but it recalls it only as an octagonal stair lighted by many windows must recall it. One can not get away from the original structure, but the stair at Biltmore is not the less an individual creation, distinctive and modern. And the same, I think, may be said of the building as a whole. Why should it not resemble a French château, since that was intended? And why should it not seem familiar even in parts as well as a whole? And yet it is familiar in suggestion only, for it is a new and original composition, designed by an American architect for American surroundings. It is surely a wonderful example of the proper use of historic precedent."

"The house," resumed Mr. Hunt, "speaks for itself. It is a great house of a great estate, and as such it stands alone among the great houses of America. I think it expresses that idea very fully, and if it expresses it well and artistically, as you have said, it surely has achieved a very marked success. Nothing has been spared, neither within or without the house, nor in the large private grounds that surround it, that might add to its beauty or make it admirable as a place of residence. But really," he concluded, "one might speak indefinitely of this house without exhausting its interest."

BARR FERREE.



A HOUSE AT SOUTH ORANGE, N. J.—See page 43.
MR. GEORGE W. MAHER, ARCHITECT.



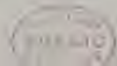
MUSIC ROOM.



GREAT HALL.

A HOUSE AT SOUTH ORANGE, N. J.—See page 43.

MR. GEORGE W. MAHER, ARCHITECT.



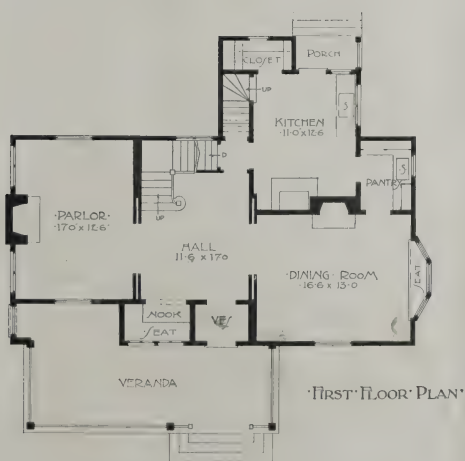
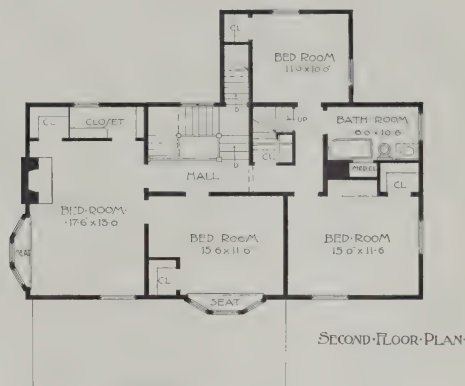


THE WALK AND STEPS.



THE TERRACE STEPS.

A GARDEN AT SOUTH-ORANGE, N. J.—See page 39.



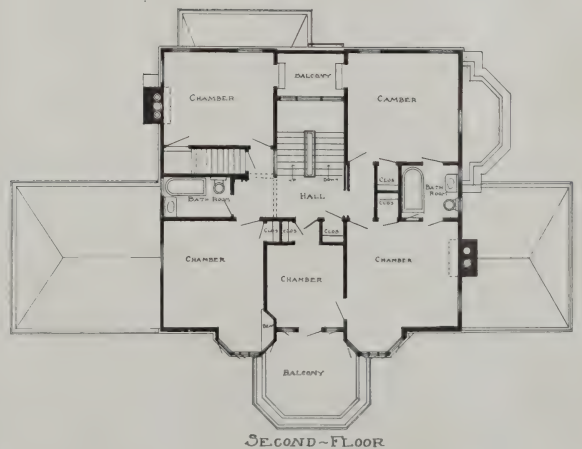
A DWELLING AT PLAINFIELD, N. J.—See page 39.

MR. A. L. C. MARSH, ARCHITECT.

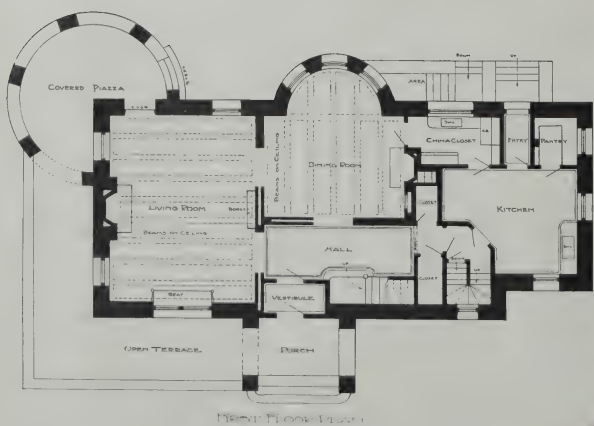


A DWELLING AT BRIDGEPORT, CONN.—See page 39.

MR. J. W. NORTHROP, ARCHITECT.



A RESIDENCE AT GREENWICH, CONN.—See page 40.
MR. HENRY C. PELTON, ARCHITECT.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



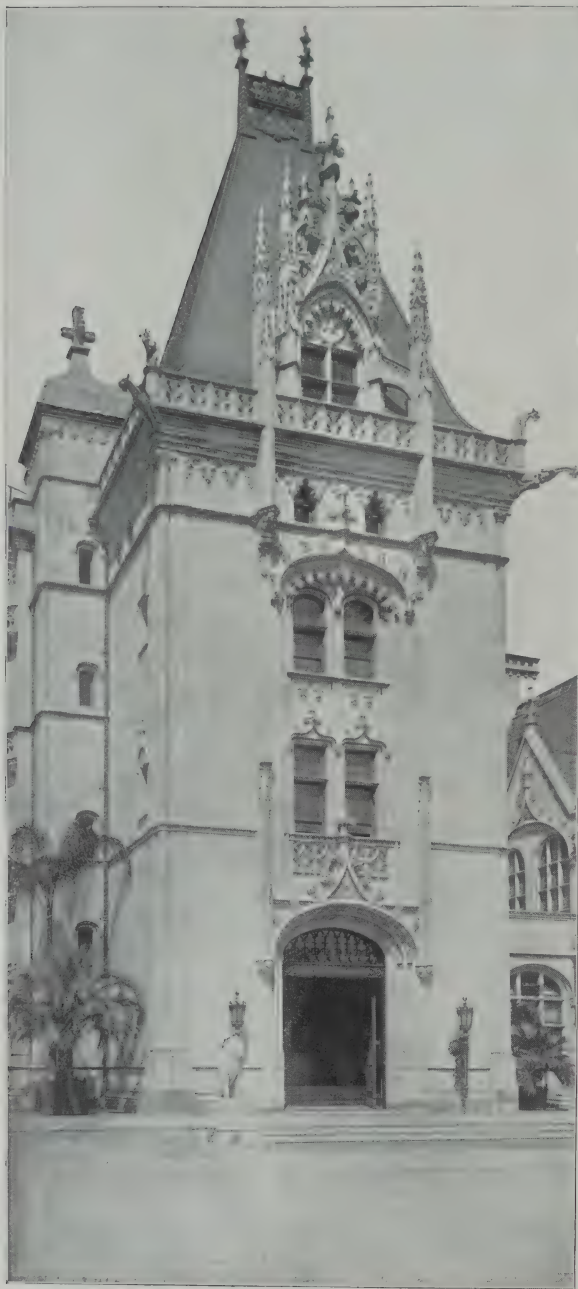
A RESIDENCE AT NEW BEDFORD, MASS.—See page 40.

MESSRS. BACON & HILL, ARCHITECTS.



A RESIDENCE AT NEW BEDFORD, MASS.—See page 40.

MESSRS. BACON & HILL, ARCHITECTS.



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ENTRANCE TOWER.



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FOUNTAIN IN COURT.



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MAIN ENTRANCE.



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GARDEN FRONT.

NEW VIEWS OF "BILTMORE,"—See page 40.

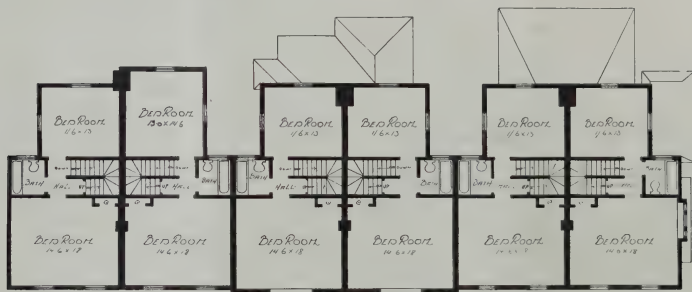




LA MARQUE ROSEBUSH.



EIGHTY ACRES OF SWEET PEAS.—See page 41.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

A ROW OF SHOPS AT GLENSIDE, PA.—See page 41.

MR. LAURENCE VISSCHER BOYD, ARCHITECT.



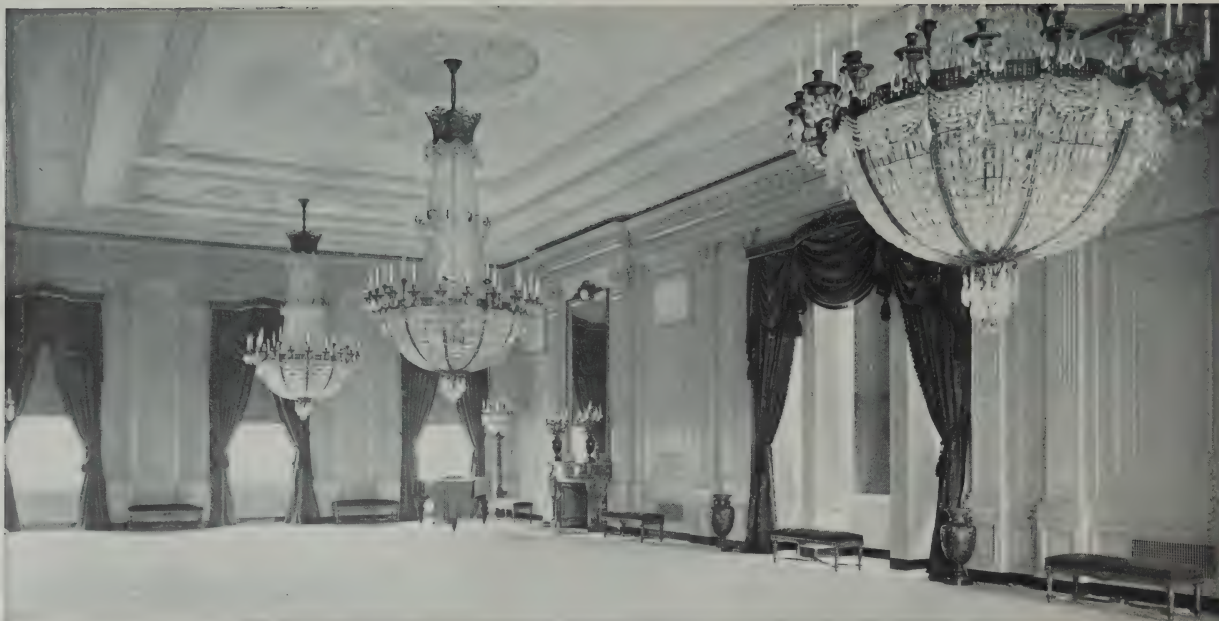


RESIDENCE OF DR. OSMAN, GLENRIDGE, N. J.
MR. WARRINGTON G. LAWRENCE, ARCHITECT.



RESIDENCE OF T. H. TAYLOR, ESQ., SOUTH ORANGE, N. J.
MR. JOHN E. BAKER, ARCHITECT.

THE PORTE COCHÈRE.—See page 41.



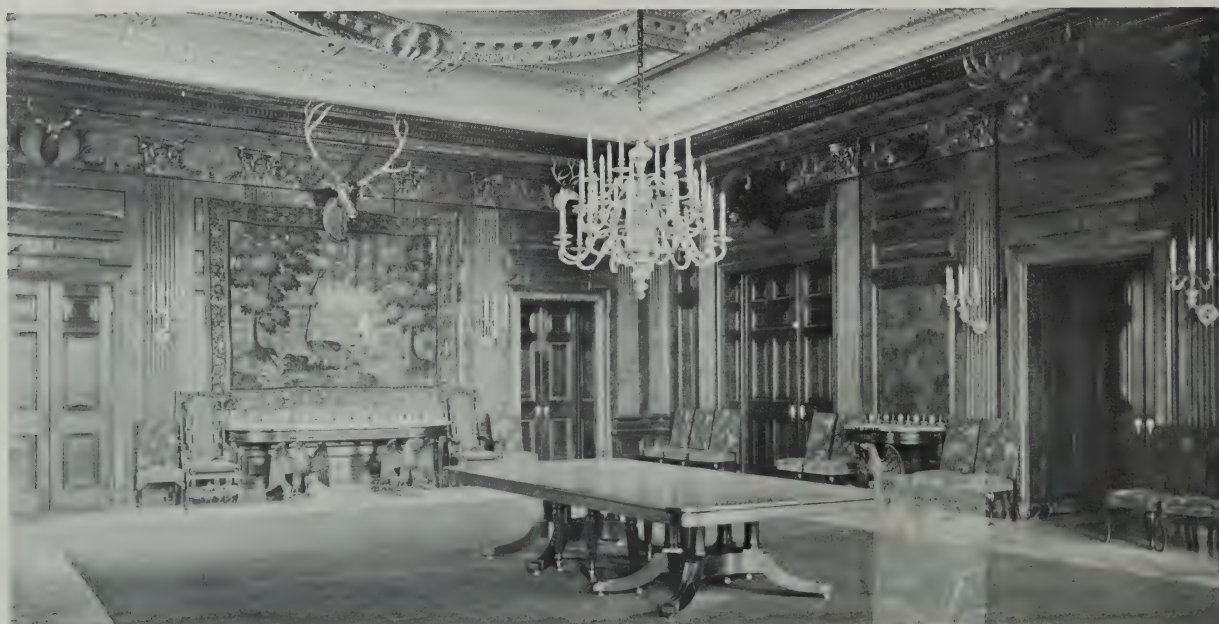
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EAST ROOM.



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MAIN CORRIDOR.



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STATE BANQUET HALL.



The Household

THE AIR BROOM AND DUSTER.

THE newest cleaning device is an air broom and duster, an article costing from \$6,000 to \$7,000, and thus entirely too costly for the private house, but a machine of marvelous utility and value in large establishments where the surfaces to be cleaned are so large as to permit the employment of such an expensive device.

The air drawing machine, as it is called, is built low, with a cylinder at either end and a heavy flywheel on one side. It is a very commonplace looking machine. It is operated, says the Tribune, by steam furnished from the plant heating the building in which it is installed, and the cost of running it is the expense of a few pounds of steam daily in the few hours the machine is in operation. There is steam in one of the cylinders on the machine, air in the other, and each stroke of the piston draws air through big pipes from the tanks with which it is connected. The operation causes a tremendous suction through the T shaped heads attached to the pipes on the floors above, and by this force the dirt is drawn into a three-inch smooth-jointed pipe running the entire height of the building and called a "riser." A lofty building has two suction pipes. Down the pipe the dirt is drawn into the first of the big thirty-inch cylinders in the subcellar. Inside this tank there is another smaller one, the top of which is connected by a big curving pipe with the bottom of the other big thirty-inch tank. This second big tank is one-quarter filled with water and the space above the water is a vacuum. As the dirt laden air from the floors above comes down through the pipe it is sucked into the first of the big tanks which is known as the dry separator. There the heavy particles of dirt are propelled to the bottom of the big tank, while the smaller and lighter particles find their way into the smaller inside tank, thence through the pipe to the second big tank, where they pass into the water. This water has previously been treated with disinfectants and all the germs are killed. After the cleaning, traps in the bottoms of both tanks are opened by the operation of cranks on the sides, and the solid dirt is taken from one, while the dirty water is drawn from the other.

Aside from the quickness with which work can be done with this machine is the added advantage of being able to get many times more dirt up at a sweeping. Out of an ordinary rug twelve by eight feet, for example, the amount of dirt that could be collected after an old style cleaning would be about one-half pound. This machine has been known to take fifteen pounds of dirt out of a rug that size that was supposed to have been cleaned every day.

SOFT COAL SCREENS.

VARIOUS means of preventing the soft coal dust from entering the more delicately furnished rooms have been proposed, says a contemporary.

A woman whose bedroom is hung with pale-hued chintzes and has white fur rugs on the floor has tried and found successful a muslin screen or "sifter" which is stitched to a light wooden frame made to fit into the window sash when the window is open. The air, but not the soft coal, passes freely through this muslin, and if the screen is used whenever the window is open the muslin soon proves how much dirt and dust have thereby been prevented from finding their way into the house. Another suggestion is to have a sheet of plate glass with a beveled edge for the top of the dressing table. This is easily kept clean, and the daintiest of toilet covers is kept fresh beneath it, while the crystal or silver toilet articles look as well on the glass as on the silken cover.

A NEW KITCHEN CARPET.

A WOMAN'S paper offers this suggestion for a kitchen carpet: Take any old carpet that is whole, but too shabby for use, clean thoroughly, and tack it down smoothly on the kitchen floor. Then make a thick boiled starch of flour and water. Rub a coat of this starch in the carpet with a whitewash-brush, and in about twenty-four hours, or when the starch is thoroughly dry, give it a coat of paint—any color desired. Dark red is a desirable color for a kitchen. When the paint is dry give a second coat, and you will have a cheap and durable floor covering, equal to linoleum, at about one-fourth the cost. By giving it a coat of paint once a year it will last for years. One great thing to recommend this carpet is that it is so easily kept clean.

A DWELLING AT BRIDGEPORT, CONN.

THE engraving on page 30 presents a dwelling erected for Edward B. Griffith, Esq., at Bridgeport, Conn.

The underpinning is built of local granite. The building above is constructed of wood and the exterior framework is covered with matched North Carolina pine sheathing and then shingles of white cedar, which are stained a moss green, while the trimmings are painted white. The roof is also covered with shingles and is stained in harmony. Dimensions: Front, 41 ft.; side, 40 ft. 6 in., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall and reception-room are trimmed with white pine and treated with white enamel. The reception-room is separated from the hall by columns supported on pedestals. The hall contains an ornamental staircase of Colonial style, which rises to a broad landing provided with leaded glass windows. The library and dining-room are trimmed with quartered white oak; the former has an open fireplace furnished with tiled facings and a hearth and mantel. The principal rooms on this floor have oak floors. The kitchen and pantries are trimmed with North Carolina pine and are fitted up complete.

The second floor contains four bedrooms, which are provided with large closets, and a bathroom furnished with porcelain fixtures and exposed nickelplated plumbing. This floor is trimmed with pine and treated with white enamel. There is one bedroom and a trunk room on the third floor. There is a cemented cellar under the entire house, and it contains a laundry, furnace, coal and wood bins, etc. Mr. J. W. Northrop, architect, 211 State Street, Bridgeport, Conn.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A DWELLING AT PLAINFIELD, N. J.

THE illustrations shown on page 29 present a dwelling which has been erected for the Misses Morgan at Plainfield, N. J.

The underpinning is constructed of red brick, laid in red mortar. The remainder of the building is covered on the exterior with shingles and stained an attractive shade of green. The trimmings are painted white. The roof is covered with shingles and is stained a darker shade of green. Dimensions: Front, 43 ft. 6 in.; side, 33 ft. 6 in., exclusive of porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.; third, 8 ft.

The interior throughout is trimmed with white pine, and it is treated with white enamel paint. The hall contains an attractive nook, provided with a paneled seat and an ornamental staircase with white enamel treads, balusters and posts, and a mahogany rail. A latticed window on staircase provides ample light for the upper and lower halls. The living-room has an open fireplace with brick facings and a hearth, and a mantel of Colonial style. The dining-room is provided with a similar open fireplace and a bay window furnished with a paneled seat. The butler's pantry is fitted with drawers, dressers, and cupboards, complete. The kitchen is furnished with all the best modern conveniences.

The second floor contains four bedrooms fitted with ample closets and a bathroom, the latter furnished with porcelain fixtures and exposed nickelplated plumbing. There are two servants' rooms and ample storage on the third floor. A cemented cellar contains a furnace, laundry, coal and wood bins, etc. Mr. A. L. C. Marsh, architect, 97 Nassau Street, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A GARDEN AT SOUTH ORANGE, N. J.

Two fine views of the garden attached to the house of A. B. Leach, Esq., at South Orange, N. J., and which is illustrated and described in full elsewhere in this number, are shown on page 28.

This garden is an interesting example of what can be accomplished with simple treatment and yet with stately effect. The chief dependence is placed on the trees, many of which are fine examples of long continued growth under favorable conditions, and on the general situation of the garden and the wonderful view which it commands. The broad walks, kept in wonderful order, are bordered with beds of plants and shrubs, while a fine note of architectural beauty is given by the dignified steps and the stately belvedere which overlooks the Orange Mountains.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

Fashions in architecture often lead to queer results. A well designed building is never out of style or out of date; but a building that has only "fashion" to commend it is apt to be a very poor affair.



The Garden

THE VALUE OF HARDY TREES.

THE heavy winter storms call attention to the necessity of planting trees of the hardiest growth wherever it is possible to do so. The suggestion is pertinent for the city and country alike, and is a matter that should be especially heeded in the planting of small city parks. Quick growing trees are of value in giving immediate shade. Too often, however, such trees are neglected; their early growth invites neglect because of their seeming prosperity, and decay often seizes them before danger has been realized. The winter of 1902 was notable for a number of late heavy storms that created havoc among the less hardy trees in the parks of New York. Poplars, sycamores, maples, even elm trees lost many limbs and were injured beyond recovery. A substitution of hardier trees for those of rapid growth should be made from time to time and whenever possible.

WOMEN AS GARDENERS.

THE School of Horticulture and Landscape Gardening for Women at Groton, Mass., is the only institution of its kind in this country, although somewhat similar instruction is given in an institution in New York. The Groton school's course is for two years, and includes horticulture, agriculture, botany, greenhouse work, and work in the flower, fruit, and vegetable gardens, economic entomology and ornithology, agricultural chemistry, plane and solid geometry, surveying, free-hand and mechanical drawing, landscape gardening and garden design.

LIVING LAWN ORNAMENTS.

LIVING lawn ornaments, formed of trees and shrubs, are only suited to certain kinds of formal gardens, and should never be used save where they fit into the garden scheme in an entirely harmonious manner. They invariably attract attention as matters of curiosity, and are more often than than objects of adornment. Where a single support will serve, and furnish boughs enough from which to form the object, one tree is used. The various slender branches putting out from that are twisted and curved and formed into the shape desired. In the case of an object like a crane, there would be required two trees, to give the crane its two long legs; and here the floral artist produces a highly natural effect by using for one of these legs a tree with a bend in it, thus giving the crane the one straight and one bent leg inseparably associated in the mind with the crane of native or of pictorial art. With its long body and long neck the crane needs a good many branches in its construction, and so two trees are needed in it for that reason also. Some of these lawn ornaments are formed wholly of the larch; in some a few light bamboo ribs may be used in the body, upon which to train the larch boughs. This is done in the body of the cranes; but the few ribs thus used are quite out of sight in the season of foliage, when the crane stands in a coat of green.

CARE OF WINTER HOUSE PLANTS.

ONE secret of success with plants in midwinter, and, in fact, at all other times during the cold season, says the Household, is in keeping the air around them reasonably cool and moist. Many window gardeners think that in order to have their plants do well, they must keep them warm; and, of course, this is in a measure right; but the chances are if they are beginners, they will not only keep them warm but hot. This, in the daytime, of course; then, at night, the air very likely becomes from thirty to forty degrees colder than in the day; and if, along in February, the plants become ill-looking and refuse to grow and bloom, when in reality they ought to be doing both, the owner begins a patient search for insects, sour soil, and defective drainage, and lays her non-success to any cause but the right one.

Do not keep plants too warm; keep them warm enough, but in mistaken kindness do not overdo the matter. Sixty-five degrees Fahrenheit will suit the majority of plants that one will find in most window gardens. Of course, they very frequently live and do well in an atmosphere anywhere from five to ten degrees higher than the one named, but this does not prove anything. The other conditions have been just right, else the plants would, in time, show the effects of the high temperature. Long, slender, brittle shoots, yellow leaves, and continually dry soil are the principal effects of an atmosphere above seventy degrees; and really satisfactory plants can not be grown in such a place.



Lights and Lighting

LIGHT FASHIONS.

CHANDELIERS, it is said, have almost, if not entirely, gone out of fashion among those who know. All sorts of devices, many of them of much beauty, are used to light rooms. Some rooms are lit by means of appliques fastened at the ends of the room upon the wall at about the height of six feet. Besides appliques, the beautiful French girandoles, once used as mantel ornaments and lights, and having urns at the top filled with sperm oil, which ran down into two or more branches, hung with pendants of crystals of richly cut facets, are now placed upon the dinner table, and add greatly to its beauty. The Sabbath candlestick of the Hebrews and the tall brass and silver candlesticks of other ancient churches, as well as the stately seven branched candlestick of Rome and the ancient lamps of Egypt, are abundantly used. Nor is Greece forgotten, for tall stands hold the quaint, boat shaped lamps of ancient Greece. As a matter of fact as much ingenuity is now applied to the making of light holders and devices for lighting as seems given to the manufacture of light itself. Old-fashioned ideas are being rapidly forgotten and many new and beautiful models are coming into use almost daily.

DOME FIXTURES.

DOVE fixtures for dining-rooms are made in American art glass, in colors suitable to the room. One style shows a large dome, which completely covers the lights, of warm hued art glass, with a fringe of flat glass pendants, about five inches long, and one inch in width. Domes are rounded, bell shaped domes, pagoda domes, and square domes. Beaded glass figures extensively in new modes of lighting rooms. Lamps and shades have fringes of small glass beads, that look like dew drops strung upon threads of rain, and globes for holding light are made of beaded clear glass. These are used as ceiling lights, especially in drawing-rooms, and give the radiance of diamonds.

NEW WHITE HOUSE FIXTURES.

IN the restored White House the gas fixtures have been practically cleared out. It has long been evident that the use of electricity in the type of chandeliers suitable for gas or oil lighting was an absurdity, when electricity only was to be employed. The change permits much more tasteful and effective methods of display. The so-called "sunburst," used in some of the rooms of the temporary office building, has been put into two or three of the rooms of the White House, but as a rule its lighting appliances are similar to the candelabra designs of the period of 1800, and have been worked out with special reference to the present methods of lighting. The results are described as exceedingly satisfactory.

NEW VOGUES IN LAMPS.

ONLY a cursory glance through the shops is needed to impress one as to the variety in modern lamps. One has an almond green bronze vase and bowl, so designed that very large oval glass jewels in green, but several shades deeper in color, are inset most effectively. The shade attached is of pagoda shape, formed of jeweled glass, a color composition of rare design and glowing beauty. The lamp alone is sold at \$127, while the shade costs \$102. Most of the very costly lamps are intended to be lighted by electricity, a most desirable feature, preserving them from much wear and tear. Light and graceful fixtures are to be had in gilt, bronze, silver, nickel, as well as verd-antique and brown and black bronzes, from \$5 to \$100, from \$100 to \$500.

CANDELABRA AND TORCHES.

A PAIR of Russian candelabra in silver are described as unique in their line of candle sockets to the number of five, running in a horizontal line, and held in the middle by a broad silver triangle, on which in relief are forms of archaic four-footed beasts. This triangle is attached to the column which forms the base of the candelabra. They may be bought for \$18 each, which is surprisingly cheap for such a rarity. A very quaint antique torch model of Russian origin as well is duplicated in tin, and is extremely picturesque. Imagine, says a contemporary, a funnel reversed, so that its broad mouth circle is turned downward, and from its smaller end projecting upward a tin tube of the same dimensions four inches long. On this tube is what seems to be a garden watering pot. This holds the burning fluid, which in flame passes out of the spout.

A RESIDENCE AT NEW BEDFORD, MASS.

THE residence illustrated on pages 32 and 33 has been recently completed for C. S. Knowles, Esq., at New Bedford, Mass.

The entire first story and underpinning, also the balustrade to the terrace and porches, are built of rubble stone, laid up at random. The remainder of the building is of wood and the exterior framework is covered with shingles, which are stained a soft brown color. The roof is also shingled and is stained a dull green color. The balcony over the porch at the front is rather an attractive feature. The wide, overhanging eaves were constructed with mock rafters. Dimensions: Front, 64 ft.; side, 33 ft., exclusive of terrace and porches. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The hall has a vestibule with a tiled floor, and both the former and the latter are finished with mahogany. The hall has a paneled wainscoting and an ornamental staircase, with turned newel posts, balusters, and rail. The living-room is finished also in mahogany, and has a paneled wainscoting and ceiling beams, bookcases, and paneled seats. The open fireplace is built of brick with the facings and a hearth of the same, and a mantel shelf supported on corbel brackets. The dining-room is finished in mahogany and has ceiling beams, a paneled wainscoting, and a pilaster effect. The fireplace is built of brick with the facings and a hearth of the same, and mantel. The butler's pantry is fitted with sink and ice-box, cupboards, china closets, etc. The kitchen is provided with a sink, entry, store pantry, rear hall, and stairway.

The second story is trimmed with white pine, and is treated with white paint. This floor contains the owner's room, sons' room, and two guest rooms. The principal feature of this plan is the fact that each chamber has a separate bathroom. These bathrooms are paved and wainscoted with tile, and are furnished with porcelain fixtures and exposed plumbing, all nickel-plated.

The third floor contains the servants' quarters and ample storage room. A cemented cellar under the entire house contains the heating apparatus and other necessary conveniences. Messrs. Bacon & Hill, architects, 27 School Street, Boston, Mass.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A RESIDENCE AT GREENWICH, CONN.

THE residence which is illustrated on page 31 has been erected for William H. Waterbury, Esq., at Greenwich, Conn.

The underpinning and the balustrade to the terrace, and also the chimneys, are built of rock-faced field stone laid in an attractive manner. The exterior is covered with shingles. The first story is stained a dark red and the second story a dark brown. The trimmings are stained a dark brown and the sashes are painted ivory white. The roof is covered with shingles and stained a moss-green. Dimensions: Front, 35 ft.; side, 35 ft., exclusive of the library bay at front, 12 ft. by 12 ft. in size. Height of ceilings: Cellar, 8 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. The entrance is into a large living-hall, which is trimmed with dark oak. It has a paneled wainscoting and a sawn and carved staircase of Elizabethan style running up to a broad window seat. The fireplace is built of rough stone with a broad arch, the whole capped with a medieval hooded mantel. The library is finished in white enamel and it has bookcases built in and a broad paneled seat. The dining-room is furnished in oak and it has a floored bay window with arch, etc. The kitchen and its dependencies are trimmed with yellow pine, finished with hard oil, and are furnished with all the best modern conveniences.

The second story contains five bedrooms, linen closet, and bathroom. The floor is trimmed with white pine and is treated with white enamel. The bathroom is furnished with porcelain fixtures and exposed nickelplated plumbing, and also medicine closets with mirror faces.

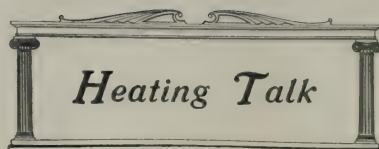
The third floor contains the servants' quarters and ample storage room. There is a laundry, servants' bathroom, heating apparatus, fuel bins, etc., in the cellar. The house is provided with Flemish brass hardware and fixtures, electric wiring and lighting, and speaking tubes, etc. Mr. Henry C. Pelton, architect, St. James Building, 1133 Broadway, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

NEW VIEWS OF "BILTMORE."

Some new views of Mr. George W. Vanderbilt's great house at Biltmore, N. C., are reproduced on page 34.

They include a general view of the garden front of the house; a larger view of the entrance tower; a detail of the main doorway, looking across the garden front; and a glimpse into the fountain court. These illustrations have been made from photographs copyrighted by Mr. C. F. Ray, Asheville, N. C.



Heating Talk

BURNING SOFT COAL.

OWING to the scarcity and high price of hard coal, soft coal, says an exchange, is being burned to a considerable extent in stoves, ranges, furnaces, and steam and hot water boilers originally designed for use with hard coal. Those who have had the most experience in burning soft coal and in the designing and manufacture of apparatus for the purpose, agree on two points: that the smoke pipe and the chimney must be much larger than is required for hard coal, and that it is essential for some air to enter the combustion chamber above the fire if soft coal is to be burned successfully and the soot production kept down or carried away before it can clog the system. Wherever hard coal apparatus is being used for burning soft coal the reverse of these conditions exists, and it is seldom found necessary to open the feed door to promote combustion. The small size of smoke pipes and chimneys necessitates their being cleaned before the accumulation is sufficient to interfere with the operation of the apparatus. Cooking stoves and ranges must have their flues cleaned still more frequently.

FUEL STIMULANTS.

ONE of the immediate results of the scarcity of anthracite coal in the Eastern markets, and the high prices demanded for such small quantities of fuel as can be supplied, has been the appearance of a number of artificial adjuncts to coal consumption which are best described as fuel stimulants rather than as artificial fuel. Most of these nostrums undertake for a very small price to increase the burning and heating capacity of coal to a truly marvelous degree. It is a safe assertion to point out that most of them are utterly valueless, if, indeed, there be one of any value at all. A little thought would convince the most skeptical that, if they could perform only a fraction of what is claimed for them, they would be worth very much more than the prices charged. As a matter of fact a chemical analysis of one compound shows it to be utterly worthless as a fuel stimulant, and providing a net profit to the makers of \$78.69 per 100 pounds. It is not easy, in this world, to get something for nothing, and the fuel stimulant is no exception to this long-established rule.

FLUELESS GAS STOVES.

CONSIDERABLE discussion has arisen in England over the use of flueless gas stoves in dwellings, and the dangers resulting from their use. A cubic foot of coal gas, points out a learned authority, yields on combustion 0.52 cubic foot of carbon dioxide and 1.3 cubic feet of water vapor. If one does not mind breathing hot, polluted air, highly charged with water vapor, and getting chilled with cold walls, a Bunsen burner stood on the floor is the most effective method of getting the whole of the heat of combustion into the air of the room, and no flueless stove can do more than this. In order to get something to sell, stoves are constructed in which some of the water is condensed, and the public are informed this removes all deleterious products. But it is impossible to get away from the fact that if healthful heating is to be obtained it is the solid objects and walls of the room that must be heated, and not the air; and although some of the heat is lost thereby, a flue to take off all the products is an absolute necessity.

GERMAN HOUSEHOLD BRIQUETTES.

A RECENT report from the American Consul-General at Berlin points out that household briquettes, as made in Germany from brown coal, peat, and to a small extent from anthracite dust, are used for grates, heating stoves, cooking stoves and ranges, and constitute the principal household fuel of Berlin and other German cities. They are clean to touch, kindle readily, burn with a clear, full flame, and are cheaper in Berlin, ton for ton, than anthracite or good bituminous coal. They are made, largely from brown coal, in factories located mainly in Silesia, Saxony, and the Rhine provinces, and united in a syndicate, which controls the output, regulates prices, and looks after the general welfare of the industry.

WALLS AND HEAT.

THE relationship between heating and building is directly shown by the fact that some walls permit a readier escape of heat than others. The best heating apparatus will fail to give good results in a poorly constructed building.



THE ARCHITECT'S POSITION.

The architect is at present, says the Building News, in the position of one between two influences; one is tradition, the other construction; they are both powerful forces. He may give himself up to the following or imitation of the styles of past ages, or he may try to ignore them and throw them over; but he is confronted with the necessities of construction—this is the force that holds him to a definite course; if he attempts to avoid construction he plunges into chaos. There is no relief in trying to be original when these influences are so against one.

The young enthusiast who designs a row of shops delightfully unconventional and artistic may find it impossible to pass his shopfronts with their small windows, with practical and commercial clients; or his design for a church may be impracticable in plan or construction. He is forced to study utility and practical construction; if he does not, he finds himself in the wrong. It is, of course, much easier for him to follow the conventional style of house or shop building, the traditional type of church. It is sure to be liked, and there is less trouble infinitely than trying to do something that is original; so, as a matter of fact, architects work in the traditional groove because it is easier, and gives satisfaction.

If the architect tries to be original, he can not go so far as to defy the laws of construction or the requirements of practical life. They are inexorable, a powerful restraint on his imagination, for good or evil, and the most logical mind must see that he must yield to these material factors if he wishes to be reasonable as well as original. There will always be, of course, architectural zealots or fanatics, as there have been in other professions. These men are often men of talent in one direction, and the wisest way is not to attempt to crush or suppress them, or to withdraw their license to practise, or to excommunicate them, but, as Macaulay observes in one of his essays, adopt the adroitness of the Roman Church by binding all zealots to her service.

WILLIAM MORRIS'S HOUSE.

"THE RED HOUSE," the house built by William Morris, the celebrated English author-artist, in Bexley Heath, has been sold at public sale, and public attention has again been directed to it. The architect, Philip Webb, carried out Morris's own views in house design, and it was intended that his views in domestic building and decoration should be thoroughly worked out in it in practise. Mr. Symer Vallance has described the house as follows:

Upon entering the porch, the hall appeared to one accustomed to the narrow ugliness of the usual middle-class dwelling of those days as being grand and severely simple. A solid oak table with trestle-like legs stood in the middle of the red-tiled floor, while a fireplace gave a hospitable look to the hall place. To the left, close to the foot of the stairs, is a screen with leaded panes of glass that divides the main hall from the lesser hall or corridor. To the right is a press or cupboard with a seat below (on the outside of its two doors are figure compositions begun in oils, but not finished; inside are some experiments in diapering on a gold ground, by Morris) and beyond this press is the dining-room. Its fireplace is of brick, and stands out from the middle of the wall, and, like the rest of the fireplaces in the house, is without a mantelshelf, the chimney-breast going straight up to within a short distance of the ceiling. The furniture included a wide dresser ornamented richly with painted decoration, a movable settle with high back and leather panels, and plain black chairs with cane seats ("the revival of this form of chair is due to Morris's example"). The walls were tinted with distemper and the ceiling ornamented by hand in yellow on white, the pattern being pricked upon the plaster and afterward filled in with distemper. Opposite the front door is the wide oaken staircase, the underpart left open, not boxed in. Upstairs above the dining-room is the drawing-room with a decorated open roof and, as a chief piece of furniture, a great painted bookcase or cabinet, with a ladder stairway reaching to the top of it, where one could sit; while thence another ladder led into a storage-loft in the roof. The walls of the principal bedroom were hung with embroidered serge and here also was a decorated wardrobe—a wedding present from Burne-Jones, who, while on a visit to the Red House, in 1860, commenced a series of paintings in tempera on the end wall of the drawing-room. Rossetti also executed a panel.

A ROW OF SHOPS AT GLENSIDE, PA.

THE problem of supplying small shops with living quarters for the shopkeepers of a suburban village, or a small city, has been well solved in the successful and artistic combination of a row of them erected for Mr. William T. B. Roberts, at Glenside, Pa., illustrated on page 36.

The buildings are constructed on stone foundations. The underpinning and part of the first story is built of brick laid up in red mortar. The remainder of the first story and the second story are covered with rough plaster cast. The gables at the front are covered with shingles and beamed in the peak. The plaster coat is treated with Colonial yellow paint and the trimmings are stained a soft brown color. The sash and window frames are painted old ivory white. The roof is covered with blue slate. The cellar, with a cemented bottom, contains a store cellar with outside entrance.

The first floor of each apartment contains a shop at the front, while at the rear of the shop is the living-room and kitchen, provided with all the modern conveniences. The second story of each building contains two bedrooms with large closets and a bathroom fitted up with all the necessary fixtures and exposed nickelplated plumbing. There is one bedroom and a storeroom on the third floor for each family. Mr. Laurence Visscher Boyd, architect, Harrison Building, Market and Fifteenth Streets, Philadelphia, Pa.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

EIGHTY ACRES OF SWEET PEAS.

SANTA CLARA COUNTY, Cal., is noted for its wealth in floral beauties, the moderation of the climate due to the proximity of the ocean on one side and the bay of San Francisco on the other making the atmospheric conditions extremely favorable for the fullest development of plant life. As an indication of the rapid growth of the rose under favorable conditions visitors are shown a residence completely covered with a bush planted only six years ago, with thousands of blossoms in perpetual bloom.

Cultivation of flowers for commercial purposes is a profitable employment in Santa Clara County. The illustration shows eighty acres of sweet peas in bloom. There is always a demand for the flowers in neighboring cities, while the call from less favored localities for seeds of the plant is constant and ever increasing.

The illustrations on page 35 are from photographs taken specially for the BUILDING MONTHLY.

THE PORTE COCHÈRE.

THE porte cochère is so useful an appendage to the country house that even those of moderate size are now supplied with it. Its purpose is the very simple but useful one of protecting the occupant of the carriage while mounting or alighting, and they are so useful as to be practically indispensable. Its architectural treatment is largely that of an extension of the porch, and the single rule to be observed in its design is harmonious adjustment to the house and artistic articulation with it.

Two examples of porte cochères are shown on page 37. One is from the residence of T. H. Taylor, Esq., at South Orange, N. J., Mr. John E. Baker, architect, Orange, N. J. The other is from the house of Dr. Osman, at Glenridge, N. J., Mr. Warrington G. Lawrence, architect, 111 Fifth Avenue, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

WINDOWS AND PLANTS.

A MASSACHUSETTS inventor has devised a way for overcoming the difficulties in connection with the maintenance of window conservatories and has patented a handy arrangement which leaves the window free at any time for cleaning and makes it possible to obtain access to either side of the plants without turning the pots. The shelves are supported by an extremely light frame which can be easily removed when the plants are transferred to the garden in the spring. A small bracket is secured to the top of the window frame and a second bracket rests on the floor, the vertical post of the frame swinging between the two. A bracing rod aids in supporting the pots and the whole stand may be easily swung around against the wall of the room if it is desired to clean the windows, to display the plants, or to admit more light.

There are plenty of inventive minds in the architectural and decorative professions as well as in the building and constructive trades, but they often need a closer banding together than they generally have in order to secure the best possible results. "In union is strength" is as true in art matters as in national affairs.



ROOF TEXTURES.

MR. F. C. EBEN, an English architect, lately prepared a useful paper on roof-coverings, from which the notes in this column have been taken. The really important quality in roofs, he pointed out, is texture. A roof may be poor and neutral in color, but with good texture the simplest becomes interesting. A feeling for texture is as useful to the architect as an eye for color. Roofing tiles should never be selected for uniformity of color, as some specifications require. It is only by slight varieties of coloring in the separate tiles that the color of the roof as a whole becomes beautiful.

WEATHER AND DESIGN.

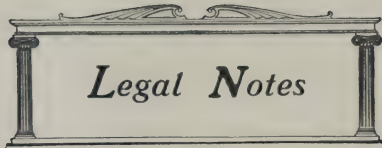
In a good roof there are many little practical devices to defeat the weather which all help to give interest and variety to the surface. Where the tiles abut against vertical surfaces, as chimneys, gable copings, party-walls, and the like, they are given a slight upward tilt sideways to throw the water away from a naturally weak place. A similar practise is that of laying a tile flat along the verges against the end rafter. This gives a side tilt, which prevents rain-water trickling down the gable face. That specially-made tile, known as the "tile and a half," should be avoided, as the effect of a very broad tile in every other course is unpleasant. A good tiler can work the verges perfectly well without it by a little cutting. For ridges nothing is better than the plain half-round. It has a sanded face, like the common tiles, and is thicker—say, about one inch—and is bedded in hair mortar. A thickish projecting fillet of white mortar over each joint has an agreeable effect. Special end ridge tiles do not look so well as a bottle end or pebble in mortar in an ordinary ridge tile. For the valleys it is not always necessary to use valley tiles or lead. A pleasant effect is produced by sweeping the tiles round. This involves a certain amount of cutting, and some packing on the back of the valley rafters.

EAVES GUTTERS.

ALL eaves gutters are something of a disfigurement. Substitute for the pleasing irregularities of the natural eaves line a line just as hard as cast iron can make it; in other words, fix a half-round gutter, and not only eaves, but, to a great extent, elevation also will be spoiled. Where it is necessary to collect the rain-water, or where walls are thin, it is better to use wooden spouting. It may be square or V-shaped in section, or hollowed out of the solid; but it must be kept small, or the effect is clumsy. The downpipes in this case will be of wood, with tapering heads, and will stand clear of the wall, to which they are attached by long holdfasts. When a parapet or cornice gutter is out of the question, nothing looks so satisfactory as dripping eaves. It is not likely that dripping eaves have ever done as much damage as neglected gutters and downpipes, choked with their own rust, and discharging the collected water of successive seasons into the walls, have done in a single generation.

LEAD ROOFS.

WHEN the roof is of steep pitch and shows conspicuously against the sky, lead is not suitable, except to monumental and lofty buildings, in which the proportion of visible roof to wall surface is not large. A cottage roof, with eaves ten feet or less from the ground, would not be a pleasing object if covered with lead. When the roof is flattish and but little seen, or entirely hidden by parapets, lead is the obvious material to use. It is especially suitable to those small and highly-decorated roofs, such as often surmounted octagonal turrets of the Tudor period. As with other kinds of roof, so with lead: there are several devices in the laying invented for purely practical reasons, but which lend esthetic effect and interest. In many old churches the sheets are not laid parallel to the gable copings, but strike into them at an angle. Then, too, the boarding under the lead in medieval roofs was not close-laid, but with gaps of about two inches between each board. The motive of both these devices was by increasing the friction, to keep the lead from creeping; and each gives some interest to an otherwise mechanical surface. The boarding in old roofs is almost invariably oak; with modern imperfectly seasoned wood chemical action is set up and the lead perishes; but if the boarding be thin, say one-half inch, and water-seasoned, it is probably safe to use oak.



Legal Notes

ALTERATION OF CONTRACT.

WHERE a building contract, provided that it was agreed that the work of driving piling and increasing footings, in addition to the amount specified in the contract and specifications, was to be paid for in addition to the amount therein mentioned, an increase in such footings did not constitute such a change in the contract as would relieve a surety for the contractor's performance thereof of his liability on the contract. *Burnes estate vs. Fidelity and Deposit Co. of Maryland et al.*, 70 S. W. Rep. (Mo.) 518.

CONTRACTOR'S AUTHORITY TO SUBCONTRACT.

A MATERIALMAN sued a contractor in justice court for breach of a contract to purchase materials of him, and joined with it a cause of action to foreclose a mechanic's lien claimed for furnishing material, making the owners parties also. On appeal to the district court, the lien was abandoned. *Held*, that, as the cause of action for damages was not dependent on the lien, the fact that the justice exceeded his jurisdiction in undertaking to foreclose the lien did not destroy his jurisdiction of the cause of action for damages, so that the district court acquired similar jurisdiction on appeal. *Herry vs. Benoit et al.*, 70 S. W. Rep. (Tex.) 359.

DEFECTIVE SCAFFOLD.

WHERE a scaffold is required for the purpose of sustaining the workmen and also the strain of hoisting up sections of heavy iron pipe, the weight of such pipe, and the additional weight caused by bracing up the pipe after being put into place, presumptively the ordinary workman, not familiar with the construction of scaffolds, and having no experience in such work, is not able to judge of the sufficiency of the appliance for such purpose. In such case, if the master directs such workman to go upon the scaffold and assist in handling the pipe, there is an implied agreement upon his part that the same is reasonably safe and suitable for the purpose. *Hagerty vs. Evans et al.*, 92 N. W. Rep. (Minn.) 399.

PERSONAL INJURY—CONTRIBUTORY NEGLIGENCE.

PLAINTIFF, an experienced carpenter, of mature years, weighing one hundred and sixty pounds, and with good eyesight, was employed to put up the roof joists of a building, without anything being said as to what he should stand on in doing the work. When he commenced the work the ceiling joists, designed only to support laths and plaster, and no floor, being two by six inches, and fourteen feet long, were set unbridged, and certain loose boards were lying thereon. Plaintiff stepped on a defective joist, having a knot traversing and severing the fiber, which broke, precipitating him to the floor below. *Held*, that the accident occurred by reason of plaintiff's own negligence in failing to examine the sufficiency of the joist. *Baxter vs. Lusher et al.*, 65 N. E. Rep. (Ind.) 211.

SUBSTANTIAL COMPLIANCE WITH CONTRACT.

WHETHER or not lumber furnished by a contractor be just as "good and durable" as lumber of a different kind, called for by his contract, is not the proper test for determining whether there has been a substantial compliance on his part with the terms thereof. On the contrary, the owner of the building is entitled to damages where material different from that specified in the contract is used in the construction of a building, even though the materials used be in all respects equally as good as those the contractor agreed to furnish. *Cannon vs. Hunt*, 42 S. E. Rep. (Ga.) 734.

TIME OF COMPLETION.

WHERE a contract for the erection of buildings provided that the contractor should have the brick walls ready for the roof in thirty days from the date, and the balance of the work as soon as practicable thereafter, the contract did not prescribe any time within which the work should be finished, as required by *Hurd's Rev. St.* 1899, p. 1104, section 6, in order to entitle the contractor to a mechanic's lien therefor. *Williams et al. vs. Rittenhouse & Embree et al.*, 64 N. E. Rep. (Ill.) 995.

WAIVER OF LIEN.

THE claimant of a mechanic's lien does not necessarily waive his lien when he takes the note of the owner of the premises, who incurred the debt. *Kendall et al. vs. Fader*, 65 N. E. Rep. (Ill.) 318.

THE REMODELED WHITE HOUSE.

BY WALDON FAWCETT.

THERE has lately been completed a reconstruction of the Presidential mansion at Washington which ranks as the most important and most extensive project of the kind undertaken since the erection of the historic structure. The White House, the official residence of the Chief Magistrate of the United States, was the first public building erected in the city of Washington, and although in its present appearance it has many modifications of the original design it has by no means undergone that complete reconstruction which in the case of the Capitol has blotted out all semblance of the initial structure. The basic plans for the "President's Palace," as it was officially designated at the outset, were prepared by James Hoban, an architect of Charleston, S. C., who was awarded the prize of \$486.65 in American currency offered in 1792 by the Commissioners of the District of Columbia for the most suitable plans for such an edifice.

The original plans contemplated a structure three stories in height, but these were so altered as to provide only a two story design—a concession made to the sentiment in the national legislative body against such extravagant expenditure, and even with this modification Congress declined to lend financial aid to the enterprise. Funds to carry on the work were obtained from the States of Virginia and Maryland, the former contributing \$120,000 and the latter \$72,000, and the corner stone was laid October 13, 1792. It was not until 1899 that the house was sufficiently completed to permit the occupancy of some of the apartments.

Up to the time of the inception of the idea of the present improvement, or, in other words, at the dawn of the twentieth century, the Executive Mansion represented an aggregate expenditure in excess of three million dollars. The original cost of the structure, including the donations made by the States of Virginia and Maryland, was \$379,000, and there has not been a Presidential administration, since the completion of the building, which has not found it necessary to expend various sums in repairs and reconstruction looking to a proper maintenance of the building. It should be explained that the sum of \$3,000,000 above mentioned represents the outlay made for furnishings of various kinds as well as expenditure upon the edifice itself. The cost of repairs alone during the first century of the building's history amounted to \$762,000. The original appropriation for the present improvement was \$550,000, but it is probable that this sum will be exceeded ere all the details of the work are fully completed.

From an architectural standpoint it is interesting to note that the present remodeling, although the most extensive, is by no means the first reconstruction which the famous building has undergone. Following the attempted destruction of the White House by the British troops in 1814 the mansion was restored under the direction of Hoban, the architect of the original structure, which work was completed in 1817. In 1823 the south portico, as at present constituted, was added, and in 1829 there was constructed, at a cost of \$19,000, the grand portico and porte cochère of Ionic columns which has since constituted the most distinctive feature of the north front of the building.

Considered from the standpoint of the exterior appearance of the White House, the distinctive feature of the alterations, just completed, is found in the restoration of the long colonnaded wing on the east side of the building, which was removed during the administration of President Johnson or earlier. The entire present project has had as its aim a return to the original plans of the Presidential mansion. The generic scheme of the White House was selected by George Washington in conference with James Hoban, the architect, and they were frequently in consultation with Jefferson. The declaration has frequently been made that the original structure was modeled after Leinster Castle in Dublin, but the architects who went to Dublin to inspect the structure in question before undertaking the present restoration of the Executive Mansion assert that there is no foundation whatever for the claim. Both buildings are in Italian Renaissance, but the White House is far the finer example of the two, indeed, it may be noted in passing that the best American architectural critics are almost unanimous in the opinion that the White House remains today the best residence house in its exterior lines to be found in the United States. Others more recently erected represent far greater expenditure, but none compare with the Presidential home in beauty and refinement.

The White House is peculiarly Virginian in its genesis; not only does the design in its relation to the Potomac water front conform to the Virginia customs prevailing at the time of its erection, but the impress of the ideas of Thomas Jefferson upon the structure

is rendered readily apparent by the similarity of the design to that of Monticello—the Jefferson homestead—where basement wings, or terraces, extend from the main portion of the mansion house. The White House originally had projections of the same type, and while the wing on the west side in the course of time became concealed by a conservatory on top and was so cloaked on the south front by propagating gardens as to lose its distinctive character, the terrace on the east side was removed altogether, as explained above, during the administration of Buchanan or Johnson. To restore these terrace wings has been one of the principal objects of the present reconstruction.

The new terraces are one-story brick structures which extend out on the ground level, both east and west, and form a part of the basement. The top of the terraces is absolutely flat, and on substantially the same level as the first floor of the White House. They have on each side a parapet wall, about two and a half feet high, and are adorned with potted trees and box shrubbery, thus affording a beautiful vista of green extending 250 feet in each direction from the center of the White House. The treatment of these esplanades was suggested by similar work in Versailles, which in turn is possibly a partial copy of the colonnaded walks common in the architecture of Rome.

With the restoration of the terraces, or wings, the south side of the White House, facing the Potomac, becomes as was originally intended the front of the building, and what has heretofore been termed the basement is transformed into the first floor. The utilization of this former basement constitutes one of the most notable achievements of the present project. Extending throughout the length of the building is a corridor comparable in contour and dimensions with those on the first floor of the Library of Congress, and opening from this are a number of spacious reception and retiring rooms. The laundry and other similar domestic appointments, which occupied quarters in what was formerly the basement of the White House, have been relegated to obscure portions of the terraces. The new east terrace also serves an important purpose in that it has afforded space for ample cloak and dressing-rooms—apartments for which there has been sore need upon the occasions of the great social functions held at the White House each winter.

The main floor of the mansion is approached from below by a beautiful stone stairway, twelve feet in width. Niches in the side walls hold electric lighting standards. A similar stairway directly over this one, with equally gentle lifts and broad treads, connects the main and upper floors of the house. A commodious elevator has also been installed.

The keynote to the interior architecture of the remodeled building is found in the restoration of the great Colonial hall, opening from the north entrance which in the past constituted the only means of access to the building, but which will in the future be reserved for the use of the Presidential household and personal friends. The stained glass screen which was erected by President Arthur, in order to separate the entrance hall from the main corridor, has been removed and a Pompeian effect imparted by the substitution of six white marble pillars. The floor is of marble and the walls and ceiling in white in simple, yet classical treatment. The judicious arrangement of mirrors reaching from floor to ceiling tends to accentuate the evident spaciousness of the apartment.

The main floor of the White House has not been changed as much as might appear from a casual inspection, and aside from the removal of the glass screen, above mentioned, the only essential partition change is that whereby the state dining-room is enlarged by the absorption of the space which formerly constituted the westerly end of the main corridor and that occupied by a stairway leading to the floor above. The state dining-room is a magnificent apartment. The scheme is Saxon, with the walls quartered and paneled to the ceiling in dark oak. The floor is of marqueterie, and there is an immense mantel of light freestone which is richly carved. The walls are hung with rich tapestries in which green is the predominant tint, and splendid mounted game heads occupy prominent places on all four walls.

The partition walls of the Green, Blue, and Red Parlors remain unchanged, and these rooms retain in their decoration the distinctive color scheme which has characterized them for a long period past. The walls of the Green Parlor are hung in Nile green velvet; the Blue Parlor is hung in rich corded silk, and the walls of the Red Parlor are covered with Genoa red velvet. The East Room is of the same proportions as formerly, but the treatment is much more simple. The room is, in many respects, a duplicate of the *Marie Antoinette* salon at Compiègne, with white fluted column effects upon walls paneled in satinwood to the ceiling. The plaster and panels in the East Room being of the Corinthian order, similar to those in the state dining-room, preserve artistic harmony between these two apartments.

A notable feature of the East Room are the four mantels, two of which are in Fleur de Pêche marble from the Pyrenees, while the other two are in red Rouge jaspe and Rouge Royale from the quarries at Carrara. The base extending around the room is of the richly-veined Numidian marble. The floor is of oak parquetry, and the upholstery and hangings are of gold-tinted satin. On the upper floor of the mansion the space formerly occupied by the executive offices has been utilized for sleeping-rooms, and six tiled baths have been provided. The attic, which was formerly used only for storage purposes, now contains several bedrooms for servants, a bathroom, store-rooms, and a linen-room. Much work has also been performed which is not apparent to the casual observer, as for instance a great amount of labor has been expended in rendering absolutely secure the foundations and underpinnings of the White House, which are frequently subjected to excessive strain, and the number of 175,000 new bricks have been placed in position under the reception rooms, in addition to the steel joists and girders. The handling of the immense crowds which frequently assemble at the White House will be greatly facilitated by the new arrangement of the mansion, and particularly by the provision of four separate entrances instead of the single doorway, which was formerly obliged to answer all purposes.

Several illustrations are shown on pages 25 and 38.

A HOUSE AT SOUTH ORANGE, N. J.

The engravings shown on the cover and on pages 26, 27, and 28, present a house erected for A. B. Leach, Esq., at South Orange, N. J.

The design is modern, the predominating thought being to combine the artistic qualities with the practical, following the general tastes and needs of the occupant. While the general horizontal effect of the exterior and interior might suggest Greek architecture, yet this is in principle only, since no form moulding or ornament is taken absolutely from this or any other source. No material has been used that would suggest an imitation of an old product; therefore, this house represents modernism in both architecture and in the use of its materials.

It will be noticed that all surfaces are broad and simple, emphasized by strong straight lines, large windows, and simplicity in the grouping of the openings and detail. This architectural effect permits of strong color schemes, and in this respect the house is also worthy of attention. Color is one of the most noticeable of mediums in presenting pleasing effects, and by the method here employed—of large broad wall surfaces—this color scheme is emphasized.

This idea of simplicity of wall surfaces, etc., extends throughout the house, and forms one of the distinct features of its architecture. The same theory extends to all methods of finishings and furnishings. The woodwork throughout is so treated as to bring out its natural beauty of grain, which no mouldings or ornament can excel or produce. The front of the house is the formal part, looking toward Scotland Road. The rear is somewhat picturesque in its treatment, taking advantage of the beautiful view of the Orange Valley below.

The arrangement of the interior is spacious and homelike, the planning being arranged on the axis and vista theories of planning. The entrance hall is trimmed in a massive manner with oak, which is finished in the antique. The wall space is divided by massive pilasters with carved capitals supporting massive beams, which extend across the ceiling. The wall space between the pilasters are covered with a rich shade of green. The floor is laid with mosaic, in a geometrical design. The fireplace, which is faced with Mexican onyx, is provided with an over-mantel in one panel of oak which is one of the attractive features of the house.

The great hall is reached by a short run of steps, and is trimmed in a similar manner. It has a wainscoting, above which the walls are covered with a crimson burlap. The ceiling is paneled with beams. The large landscape window is one of the features of this hall, for as one enters the hall the scenery beyond seems encased in a huge ornamental frame, presenting a different picture each day during the seasons of the year. The fireplace is faced with Mexican onyx, with a shelf of the same, and an over-mantel formed of a triple arch built in mosaic.

The reception-room is treated in the Louis XIV. style, with white and gold, and has an open fireplace with Mexican onyx facings and a circular mirror for an over-mantel. The music-room is trimmed with San Domingo mahogany, and it has a wainscoting, column effect, between alcove and music-room, an open fireplace with Mexican onyx facings and a carved mantel and over-mantel extending to ceiling. The dog-rooms are of dull brass, with a lute design; the same lute design is reproduced in the lighting apparatus.

The library is trimmed with mahogany and has book-

cases built in, wainscoting, dull brass chandelier, plaster cornice, and a fireplace with a mosaic tiled hearth, Mexican onyx facings and a mantel with mirror extending to the ceiling.

The dining-room is trimmed with mahogany and has a wainscoting, above which the wall space is covered with a tapestry effect. At one side of the room a buffet is built in, over which there are stained glass windows, shedding a soft and pleasant light over the entire room. The fireplace has a mosaic tiled hearth, onyx facings, and a mahogany mantel. The crystal chandelier is a feature of the lighting of this room. The breakfast-room, which is reached by two steps, is treated similar to the dining-room, except that it has a mosaic tiled floor. The butler's pantry is fitted up complete, with dumb-waiter and stairway connection with kitchen in the basement.

The stairs rise from the great hall to a broad landing, treated in the Oriental style, from which the stairs rise to the main hall. This Oriental room has a cluster of three arches, which are supported on a group of small columns. There is an open fireplace with a mosaic tiled hearth, and facings of glass in old blues and browns, paneled seats at the side of the same and across the opposite side of landing.

The bedroom over the drawing-room has white enamel trim, with old rose walls and decorations; the fireplace has red tiled facings and a hearth and white enameled mantel. The bedroom over the dining-room is trimmed with bird's eye maple and is in harmony with the wall decorations, which are of a floral design in lavender. The alcove forms a sitting-room, with bookcases built in, and also paneled seats. The bedroom over the music-room is also trimmed with bird's eye maple, and has a broad, low fireplace with white unglaazed tiled hearth and facings and a mantel. The remaining bedrooms and nursery are trimmed with quartered oak.

The bathrooms are fitted up in a handsome manner. The floor has a paved tiled floor, a wainscoting to the height of five feet, above which the wall and ceiling are treated with white enamel paint. These bathrooms are furnished with porcelain fixtures and exposed nickel-plated plumbing. There are four guest rooms and bathrooms, besides the servants' quarters, on the third floor.

The cellar, or basement, contains the kitchen, laundry, and its dependencies, and also a furnace-room and a billiard-room. Mr. George W. Maher, architect, 218 La Salle Street, Chicago, Ill.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

THAWING WATER PIPES BY ELECTRICITY.

An exchange describes a method of thawing frozen water pipes by electricity as practised in Sault de Ste. Marie. A transformer is mounted on a sleigh and driven around the streets for this purpose. Connection is made with a primary street wire, and the current led to the transformer through a water rheostat, and thence to the frozen pipe. Attachment is made at two places, and the current passes directly through the section of pipe which is frozen. In the ordinary house service pipes the water begins to flow very quickly, frequently within a minute. The largest pipe this machine has opened was four inches in diameter, and it took fully half an hour to start the water running. The usual charge is three dollars, payable immediately the water flows, provided that the householder's pipes are frozen and not the mains.



The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

ORNAMENTAL TILE. R. Wagner, St. Louis, Mo. December 2	714,838
TILE. W. P. Meeker, Newark, N. J. December 16	715,831
TILING FOR FLOORS, WALLS, CEILINGS, FIREPLACES, ETC. F. Alcu, New York, N. Y. December 15	715,932
METALLIC TILING FOR WALLS OR CEILINGS. W. H. Landkrohn, Belleaire, Ohio. December 16	716,061
INTERLOCKING BRICKS. Choquet and Despreux Cousin, Premeaux, France. December 30	716,865
WINDOW. P. Brown, Wilmington, Del. December 2	714,776
INTERLOCKING BOARD. M. W. Wolfe, New Lexington, Ohio. December 2	714,987
WAINSCOTING OR THE LIKE. W. S. Satterfield, Belleaire, Ohio. December 2	715,156

WEATHER STRIP. M. B. Stanfield, Cincinnati, Ohio. December 9	715,619
WINDOW FRAME AND SASH. C. B. Schilling, Chicago. December 16	716,286
REVOLVING WINDOW SASH. W. E. Ogden, Marionville, Ind. December 23	716,575
SINGLE. E. Schneider, Nulley, N. J. December 23	716,583
WINDOW SASH. C. D. Tubor, New York, N. Y. December 23	716,594
MEANS FOR REPAIRING WOODEN STAIRS. F. Jensen, Copenhagen, Denmark. December 30	716,899
FRAME FOR SLIDING WINDOWS, SASHES OR THE LIKE. C. A. Walchner, Offenbach, Germany. December 30	716,966

CONSTRUCTION.

BUILDING CONSTRUCTION. W. H. Drake, Chicago, Ill. December 2	714,876
COLUMNS. W. H. Fenwick, Jr., Brooklyn, N. Y. December 2	714,886
MATERIAL OF CONSTRUCTION. E. Thacher, New York, N. Y. December 2	714,971
FLOOR UNIT. E. Thacher, New York, N. Y. December 2	714,972
BRACE FOR STRUCTURES. E. Kidwell, Houghton, Mich. December 2	715,390
BUILDING CONSTRUCTION. S. Giletti, San Francisco, Cal. December 16	716,029
ROOF. H. Halgren, Jyväskylä, Finland. December 16	716,225
REFRIGERATOR BUILDING. H. T. Myers, Colorado Springs, Colo. December 16	716,344
METAL SHEET PILING AND WALL STRUCTURE. N. S. Taylor, Chicago, Ill. December 30	717,135
VENTILATOR. C. D. Hyde, New York, N. Y. December 30	717,210

ELEVATORS.

ELEVATOR. F. T. Ellithorpe, Newark, N. J. December 9	715,648
ELEVATOR. L. E. Prescott, New York, N. Y. December 23	716,473
ELEVATOR. J. J. Slevin, New York, N. Y. December 30	716,940
ELECTRIC ELEVATOR. F. J. Sprague, New York, N. Y. December 30	716,950
SAFETY BRAKE FOR ELEVATOR CABS. W. G. Menzies, Plumstead, England. December 30	716,953

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIRE SHIELD. L. C. Glisson, Statesboro, Ga. December 2	714,794
FIREPROOF CEILING. G. Rader, New York, N. Y. December 2	714,948
FIREPROOF DOOR OR BLIND. W. R. Kinneer, Columbus, Ohio. December 16	715,815
FIREPROOF WINDOW. J. C. Fomeroy, Chicago, Ill. December 16	716,151
FIREPROOF FLOORING. A. Dickey, Newark, N. J. December 23	716,628
FIREPROOF SASH AND FRAME. C. D. Hyde, Chicago, Ill. December 23	716,637

HARDWARE.

SHUTTER WORKER. A. L. Champion, Macon, Ga. December 2	714,669
SASH BALANCE AND FASTENER. Lowery and Billings, Fort Fairfield, Me. December 2	714,720
DOOR CLOSER, CHECK AND HOLDER. J. S. Van Hook, Boston, Mass. December 2	715,175
AUTOMATIC WINDOW FASTENER. A. H. H. Sleffert, Evansville, Ind. December 2	715,217
SASH FASTENER AND LIFT. Alfred and Martin, Adelaide, So. Australia. December 9	715,531
WINDOW LOCK. T. Chope, San Francisco, Cal. December 9	715,731
LOCK AND LATCH. J. C. Algan, Gibsonton, Pa. December 16	715,934
DOOR CHECK. W. H. Dunbar, Toledo, Ohio. December 16	716,009
DOOR CHECK. J. D. Humphrey, New Britain, Conn. December 16	716,044
LOCK. J. O'Connor, Leavenworth, Kan. December 16	716,270
LATCH. J. W. Connolly, Toledo, Ohio. December 23	716,663
COMBINED LOCK AND LATCH. J. B. Cox, Canton, N. Y. December 23	716,671
DOOR SECURE. W. N. Harling, Nyack, N. Y. December 23	716,707
EAVE. THROAT HANGER. J. Jacoby, Lodi, Ohio. December 23	716,841
WATER STOP ATTACHMENT FOR DOOR OR WINDOWS. G. J. Hills, Allegheny, Pa. December 30	717,399
SASH LOCK. H. J. Lomb, Allegheny, Pa. December 30	717,424

HEATING AND VENTILATION.

VENTILATING APPARATUS. H. Kroder, Passaic, N. J. December 2	714,714
HOT AIR CASING FOR HEATING SYSTEMS. E. J. Mallen, New York, N. Y. December 2	714,724
HEATING FURNACE. C. J. Dalley, Cleveland, Ohio. December 2	715,029
VENTILATOR. J. O. Stanley, Holyoke, Mass. December 2	715,169
FIREPLACE. A. E. Weidner, Elmwood, N. J. December 16	715,914
VENTILATOR. G. G. Britton, Ansonia, Ala. December 16	715,968
RADIATOR. G. C. Hawkins, Boston, Mass. December 16	716,228
VENTILATOR. S. H. Jacobson, New York, N. Y. December 23	716,714
AUTOMATIC CONTROLLING DEVICE FOR STEAM HEATING SYSTEMS. J. H. Davis, Chicago, Ill. December 23	716,850
RADIATOR. A. E. Laycock, Moosomin, Canada. December 30	716,906
HEATING STOVE. J. E. T. Dickinson, Beatrice, Neb. December 30	716,990
FIREPLACE AND GRATE. F. F. Lowry, McMinnville, Tenn. December 30	717,231

MISCELLANEOUS.

SCAFFOLD HORSE. J. S. Tilley, Watervliet, N. Y. December 2	714,761
SCAFFOLD SUPPORT. W. J. Le Bret, Brooklyn, N. Y. December 9	715,590
COMBINED LADDER AND SCAFFOLD. M. Nauer, Cleveland, Ohio. December 16	715,944

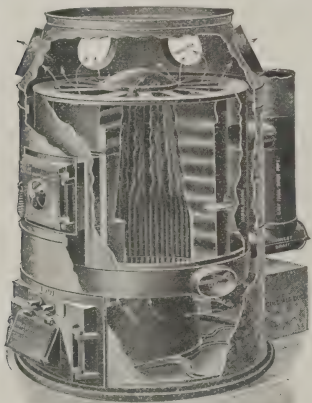
PLUMBING.

BASIN COCK. J. P. Farley, Kansas City, Mo. December 2	714,684
PIPE UNION. H. E. Marsh, New Haven, Conn. December 2	714,720
WASHER. SUPPORT. L. M. Hooper, Ruthersburg, N. J. December 9	715,268
FLUSHING DEVICE FOR WATER CLOSETS. F. Adeo, Brooklyn, N. Y. December 9	715,453
FATVET. Stretch & Crossley, East Orange, N. J. December 9	715,622
PLANE. L. M. Curry, Brighton, Mich. December 9	715,352
BEVEL SQUARE. E. W. Sreed, Minneapolis, Minn. December 16	715,897
COMBINED PLUMB LINE AND LEVEL. A. M. Benoit, Charlevoix, Mich. December 16	715,946
PLANE. M. D. Converse, New York, N. Y. December 23	716,386
PLUMB AND LEVEL. J. H. and A. E. Weyandt, Boston, Ohio. December 23	716,603
COMBINED BEVEL AND SQUARE. T. C. Auringer, Co. N. Y. December 30	716,851
ANGLE MEASURE FOR BUILDERS. F. Nolf, Moorepark, Mich. December 30	717,257

Publishers' Department

WARM AIR GENERATORS.

THE difficulties of warming a house by means of a central heating apparatus located in the cellar are now nearly overcome. In seeking the principle of correct heating, and applying the results to distinctive features of construction, many improvements have been secured; notably those incorporated in the Kelsey Heater, where great volumes of air are warmed by bringing the whole into actual contact with an extensive and properly heated surface. This is accomplished by sending the air in separate channels through corrugated cast iron flues or sections which surround the fire. In this perfected "Generator," by dividing the air into as many flues as there are sections, it is more thoroughly and evenly heated than by passing a body of air over, or next to, a hot surface. This is one of the great advantages of the Kelsey, which is the only heater constructed on this principle. The Kelsey heating device is a warm air generator, heating large quantities of air to just the proper temperature, giving perfect ventilation and unscorched air steadily and evenly where needed, through long pipes, or level pipes to rooms distantly located. It is durable, gas tight, dustless, and smoke-proof. A sectional view of the Kelsey "Warm Air Generator" shown in the illustration here presented, gives the inside and outside casings, cast iron back pipe, drafts, etc. The indirect draft is located in the lower cast iron deck flange, and provides for a long down draft. The hot gases, brought out from the combustion chamber between the sections at the top, come into contact with the backs of the sections and the inside casing, thus giving up all the heat possible before making their escape to the indirect draft flue. The baffle plate, located in the draft chamber, between the



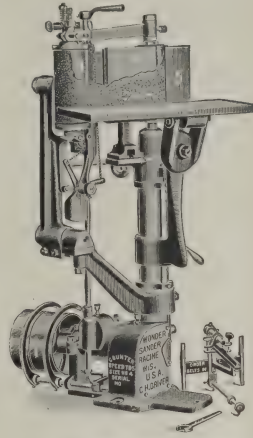
SECTIONAL VIEW—WARM AIR GENERATOR.

direct and the indirect draft, serves to distribute the heat more evenly over the sections, and is also a further aid in retaining all the heat in the heater until fully utilized. The outside casing is of galvanized iron and the upper half is lined with asbestos sheathing, and this, in turn, with tin. Between the inside and the outside casing there is a space of three inches. This is an air chamber and is open to the fresh air supply below and to the hot air pipes above. The Kelsey is adaptable to all new houses, churches, schools, etc., while in process of construction, and to places where the ordinary hot air system has been used. Generally the same flues can be used, and often one Kelsey takes the place of two heaters. For extra large residences, the battery form of placing two or more Kelsey Generators under one dome casing has been demonstrated to be a most perfect system for heating and ventilating. The Kelsey Heating Co. is at Nos. 335-341 West Fayette Street, Syracuse, New York. The New York City office is at No. 156 Fifth Avenue.

A NEW SANDPAPERING MACHINE.

THE sandpapering device illustrating this article is a spindle and surface machine capable of putting a piano finish on all kinds of wood. It is also adapted for use on metal work. The machine does straight and curved work with one handling, and skilled mechanics are not required for its operation, which is quite inexpensive. For use as a surface sander the machine is constructed with a plate and an idler,

marked 1 on the engraving. Over this plate the sandpaper belt 2 passes, and against the belt the work is held. This movement is the same as that which is obtained with a sand block. By using the machine in this way, with the sandpaper belt moving up and down at the same time that it is moving across the plate, no machine marks are left. Plate 3 is interchangeable, so that different plates with different sweeps or straight surfaces can be readily adjusted to meet requirements. To convert the device into a spindle sander, remove the plate 3 and the arm above it. In the place of a driving roll, put on a continuous

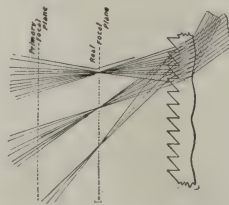


A NEW SANDPAPERING MACHINE.

roll of sandpaper. This is easily done in less than a minute, and converts it into a perfect reciprocating spindle sander. The table is universal. For roughing out work it can be set so that work may be run diagonally across the sandpaper, and for fine finish set it in line in the direction in which the belt is running. For adaptation as a perfect chamfer finish, it must be set at an angle with the spindle, so that work of any bevel can be finished in a perfectly true shape. The upper frame of the sandpaperer is swiveled in the base, so it can be turned at any time without stopping the machine, and work can be fed through at any direction. If the iron table is not adapted for some special work, wood tops may be attached to it, when suitable for other purposes. This machine is a quick and efficient polisher of wood, leather, and all kinds of metal, is run with a fair economy of labor, and does not waste sandpaper. The manufacturer is C. H. Driver, 1542 Junction Avenue, Racine, Wis.

DAYLIGHT PRISM GLASS.

THE projection and diffusion of daylight into dark buildings by prismatic lighting has increased to such an extent as to necessitate the enlargement of the factory facilities and the force of workmen of the Daylight Glass Manufacturing Company. In order to meet its requirements and to widen the field of operations, the company has purchased the business and all the patents and improvements owned or controlled by the Daylight Prism Company of America, the Daylight Prism Company of Pennsylvania, and the Daylight Glass Company of New York, and now virtually commands the production of rolled sheet prism glass and molded tiles with prism and lens combination. Four patents of March 11, 1902, and one of October 7, 1902, secured to the controlling company the exclusive rights of manufacturing, selling, or using rolled sheet prism glass. The patents carried to completion will be fully protected against any infringements, and attorneys of New York have been retained for that purpose. The company has not only



the applications for patents already filed, but has introduced new ones, which will make this industry vastly larger than before and the production will be of better quality. The principle of the refraction of light has been never so successfully adapted to useful purposes as at present. We illustrate herewith a section of prism glass showing the refraction of light in passing through the glass. Prism lights are equally available for stores, mills, offices, exchanges, halls, and private residences, and rooms and spaces that have been useless, or practically so, have been rendered serviceable by their use. The degrees of improvement wrought in buildings, and the amount of

money saved to business men and others by this method of lighting, is plainly incalculable, and it becomes more of a popular economic and scientific improvement as its merits become better known. Lights of all sizes of daylight prism window glass are cut for factories; and the company's art design glazed sash and transom lights in zinc or copper bar are ornamental, original, and useful for banks, stores, etc. The designing and manufacturing of the company is done at the factory, northeast corner Twenty-third and Chestnut Streets, Philadelphia, and the general offices are at Nos. 382 and 384 Bourse Building, in the same city. Branch offices are in New York, Fall River, Boston, Baltimore, and Washington.

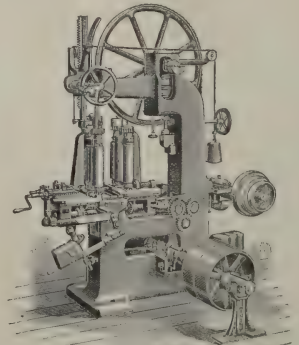
SASH PULLEYS AND MACHINE TOOLS.

THE original manufacturers of steel sash pulleys, the Fox Machine Co., of North Front and Fourth Streets, Grand Rapids, Mich., have recently disposed of their steel sash pulley business. This was deemed essential in order to enable them to keep pace with the rapidly increasing trade in wood and iron working machinery. Besides the additional space thus made available, the company are just completing an extensive four-story addition to the plant, and are also installing a larger engine and an increased boiler capacity, all of which will materially extend their manufacturing output and place them in a position to push the sale of their line of tools, comprising wood trimmers, miter machines, dado or grooving heads, veneer presses, boring machines, machine knives and iron working machinery, on a scale greater than heretofore. It will be interesting to know that the sash pulley department given up by the Fox Machine Company has been secured by the Grand Rapids Hardware Co. and Grand Rapids Sash Pulley Co., manufacturers of sash pulleys at Grand Rapids, Mich., and we are authorized to make the statement that this sash pulley business heretofore operated by the Fox Machine Co., manufacturing the Fox patent all steel sash pulleys, has been acquired by the Grand Rapids Hardware Co. by outright purchase, and that the transfer of the property includes all machinery, tools, steel, and material on hand complete and in process, together with all patents and the entire good will of the business. The recent purchasers will continue a part of the Fox line that is not already covered by designs shown in the line of the Grand Rapids all steel sash pulleys.

NEW BAND RESAWING MACHINE.

THE illustration given in this article represents a new machine, of original design, and built on the latest principles. It is a mechanism of medium capacity intended for general resawing, and is accepted as one of the most useful and speedy yet made by the J. A. Fay & Egan Company, of No. 209 to 229 West Front Street, Cincinnati, Ohio. The salient points of this resawing machine are worth careful consideration. The upper wheel is mounted on a heavy column, reducing all tendency to vibration, and insuring a high rate of speed. The improved tension on the blade is very sensitive and reliable, and is uniform on all occasions. The lower wheel is solid, thus lessening the circulation of dust, increasing the momentum, and preventing the upper wheel from overrunning it. The upper wheel has a lateral adjustment to keep the saw on its proper path without stopping the apparatus.

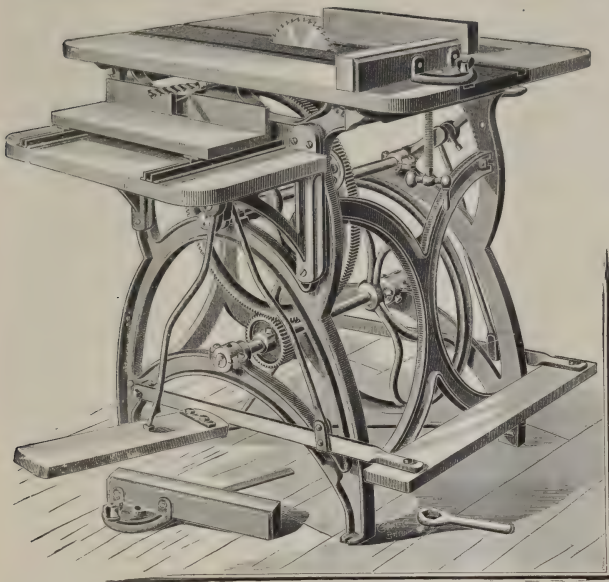
The feed is variable and constructed on an entirely improved principle. The rolls will open to receive



No. 11—BAND RE-SAW.

stock twenty-four inches wide and eight inches thick, and they are self-centering. The inside rolls can be locked in position, and the outside ones instantly be moved to or from the saw by the lever, and they are gaged by an accurate quadrant. The rolls can be tilted twelve degrees and clamped for angle work. The manufacturers of this improved tool will furnish details and engravings showing minute particulars, to applicants. They will also send free their new and complete catalogue, containing every device made.

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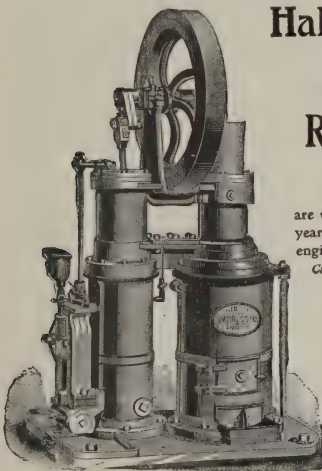
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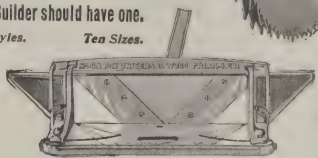
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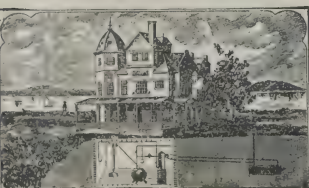
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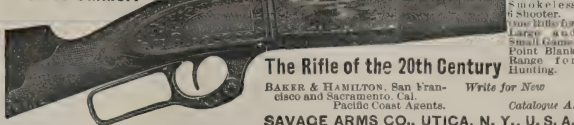
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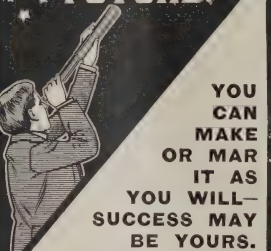
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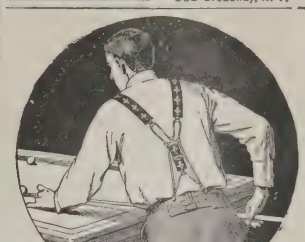
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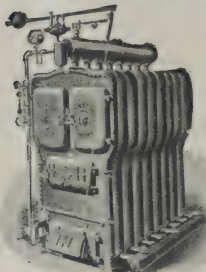
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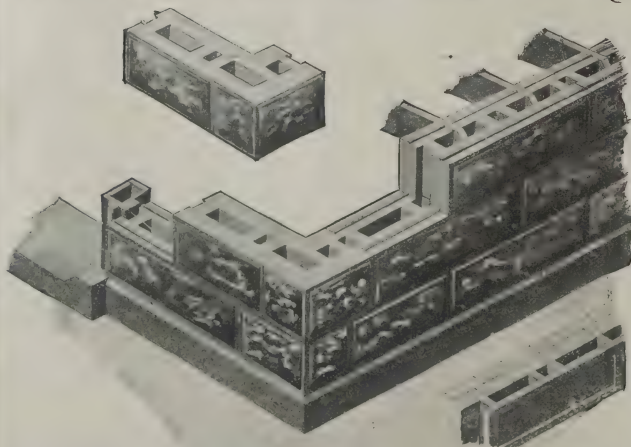
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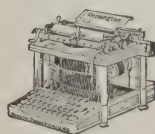
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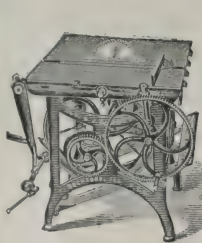
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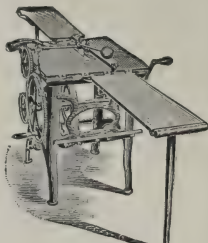
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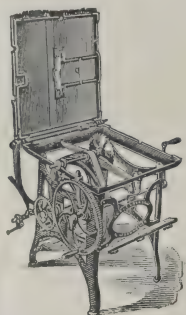
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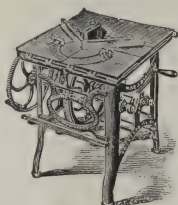
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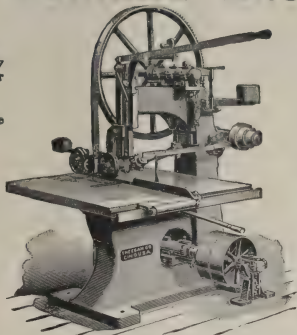
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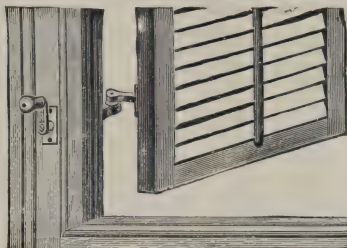
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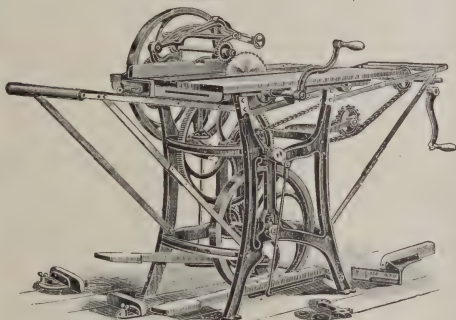
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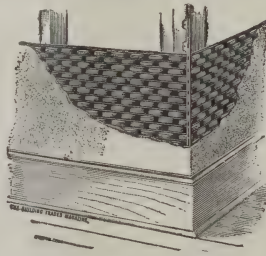
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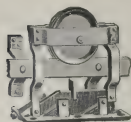
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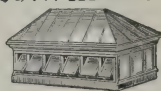
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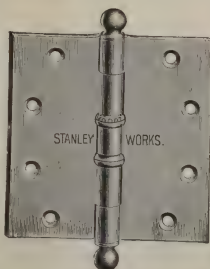
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Building Monthly.

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A PERGOLA, AND MACMONNIES' BASIN.

A RESIDENCE AT BELLE HAVEN, GREENWICH, CONN.—See page 64.

MR. WILSON EYRE, JR., ARCHITECT.

SCIENTIFIC AMERICAN BUILDING MONTHLY

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MONTHLY COMMENT.

Many important secrets in household ownership and building are now being disclosed in a popular magazine. They relate, in short, to nothing less than autobiographic accounts of how persons living or marrying on small salaries have secured ownership of their own homes. The periodical in question starts out with a circulation of a million copies; the facts adduced in this series of papers are of such stupendous importance that by the end of the year it will doubtless be many millions. Who, for example, would not gladly pay a dollar to learn how two sisters with salaries of \$4.50 and \$6.00 per week purchased a home valued at \$1,350 out of their own resources? And this is but one of the many rich plums that may be extracted from this delectable feast. Those who think it expensive to own houses will do well to ponder this series of confessions, which are truly among the most remarkable contributions to building literature that have been made for many years. Everybody has heard of such cases; the time has arrived when every one can find out all about them.

Whether one should own or rent a home is a question that can not be determined by rigid rules. Each group of dwellings has its supporters, and neither will listen to the other side. The present tendency seems to be toward individual ownership. And this is true of suburban as well as of city districts; yet one can buy square miles of country property, and never find a house to rent. The fact is, it is much cheaper to own a house than to rent one if one's circumstances permit it, if the payments are not distributed over too long a period of time, if there is always money on hand to pay bills, and if one's circumstances will allow one to inhabit a certain locality indefinitely. But if the wind changes, if the money due for the

house is not always forthcoming, if the money-earner is removed by death or disabled, or if necessity arises for removal to a new place, then the joy of personal ownership is not so pronounced. It is at least significant that it is always easier to buy a house than to sell one.

Household ownership, however, means much greater satisfaction and pleasure to the owner. If the owner is intelligent and has some knowledge of the beauty of the builder's art, the owned house becomes a source of constant delight; it acquires a personal character, in a sense, and reflects, in more ways than one, the owner's personal taste and position. Moreover, every expenditure put upon the house is a part of the permanent investment. One gets more from such a house, even although there is not a complacent landlord standing close by ready and anxious to pay the repairing bills. If one has purchased a ready-built house and it turns out to be badly built and deficient in the conveniences it was represented to have, the matter assumes another aspect, which is frequently very painful. Some people are happier in a rented house, and others are better pleased with one they own. The advantage is often as much a matter of temperament as of finance.

The proposal from Chicago that every part of a building have the union label is a progressive sign of the times that does credit to the Western metropolises of America. It is to be hoped that, in time to come, unionism will be synonymous with the best workmanship, and that union goods will appeal to the public by reason of their superlative qualities as well as by the fact that they were produced under union conditions. The labor unions have not reached this point as yet, and as far as they have gone is the placing of labels on their products. This, indeed, may be something—since it is more than nothing; but can a scab live in a union-built, union-labeled house? Perish the thought! Yet wherein is the advantage of the union label, if a non-union family happens along and removes them, or—paralyzing suggestion!—retains them in daily contemplation?

TOWN MAKING.

Do the best towns grow or are they made? is a question of more than academic interest. The making of towns, that is to say, the determination that a town shall grow and develop on a certain site and under certain conditions that have been determined beforehand, is a comparatively new method of city making. All great towns have grown great and have become great through their natural situation, their relations to commerce or the positions they have obtained in national life. Rome, Paris, London, New York, Boston, Philadelphia, Chicago, San Francisco, Hamburg, Amsterdam, have all thriven and developed naturally, and not because their founders willed it or could see far enough into the future to form the haziest conception of their present greatness. Some German cities, such as Berlin and Munich, and the Russian St. Petersburg, have thriven partly through natural conditions and partly because their growth has been carefully furthered by their sovereigns. They represent a special class of cities where natural advantages have been assisted by wise forethought and deliberate development.

But taking the great towns of the world as a whole it is apparent that they have attained their present pre-eminence by slow and natural growth. They grew, but they were not ordered to grow. A wholly different class of cities are those which have been developed through intention. They might possess natural advantages of their own, they might be conveniently situated for commerce or placed in the midst of a rich agricultural region, but their beginning has been a matter of planning and design; they arose because it was decreed they should arise; they have developed in certain directions because their founders willed that they should so develop; they may have taken on all the characteristics of a thriving modern community, but they have not lost that individual character, even in the midst of an unforeseen and abounding modern progress.

It is quite unimportant that such towns have as yet, as a rule, to make their mark. Most of them have been established too short a time to permit a fair comparison with larger and older communities. Moreover, in many instances, their actual and comparative smallness is a part of their fundamental scheme, since their founders wished to separate themselves from the mass of humanity to be found in the larger cities and form a community of persons animated, more or less, by similar ideas. Perhaps in this lies an unavoidable element of weakness. All sorts and conditions of men make up the modern town, just as they have always made up the population of every town, great or small, modern or ancient. The most insignificant have their part in city life, and the withdrawal of one

element, even if seemingly the least desirable, influences a city's life more than may at first be apparent.

Already the great factor in city making has been disclosed. Situation, planning, form of government, selectness of population, may each help, but the one great factor that makes a city great is the character of its people. The wisest of men may select the best site; they may look far into the future, and design the best plan, lay out the best streets, build the best houses, and arrange for future development and adornment, and yet if the right sort of people are not attracted to the place it will inevitably fail.

Character is the foundation of all national growth, and municipal growth is but a part of national life. History has developed no more patent fact than this, and it is as true to-day as it ever was. Intended towns have failed because the character of the people did not come up to the anticipated requirements, because such persons failed to be attracted thither, or because the natural conditions did not develop as it was hoped they would. There is, of course, always a possibility of this, and even the resources of modern science fail to see behind the curtain that veils the future of humanity.

The physical characteristics of an intended town, of one deliberately planned from the beginning, may offer many superiorities to those of an older community which has grown because it could not help itself. And this is especially true of such a town that might be founded to-day, when there are so many experts ready with an abundant knowledge, and the making of cities become, if not a science—and it can hardly be that—at least the subject of much intelligent investigation. Such a community might readily have advantages that an older community might be many years in acquiring, but it might not be the greater community fifty years hence.

The older communities are waking up. Old streets, old houses, old ways of doing things and of living are giving place to new ways, new houses, new streets. Twenty years has entirely changed the physiognomy of Chicago; less than half that time has altered much of New York almost past recognition to one who has not watched the changes as they are made. Paris still remains the most noted example of a great modern city entirely remade and transformed in our own day. London lags behind with its petty squabbles over lights and air, and its proud consciousness of unapproachable greatness.

But the changes in our modern cities, and especially in our American cities, have not been rapid enough to suit the views of advanced reformers in city life. Even so ambitious a scheme as the entire transformation of New York has been solemnly discussed and even seriously proposed. The old city is not adequate for modern views, and now that the rebuilding is well along the remaking is being conspicuously agitated.

City making is a very different problem from house construction. Building after building may be torn down and replaced and made suitable to new requirements, but the city plan and the city character are difficult to change. The men who now know New York could, no doubt, plan and devise a more modern city than actually exists; they could meet the requirements of modern transportation and devise a grander and more ornate city than is likely ever to exist on the site of the present one; but to remake and retransform the present existing city to conform to modern requirements is a problem too vast to be considered and too chimerical to be possible of realization.

Our modern cities must, then, remain largely as they are, but progress is not denied them because of this. No city is ever completed, and the change and shifting of modern life are as well illustrated in its structural movements as in the fluctuations of population. We may not, indeed, alter the city as a whole, but we can improve its parts and plan and develop its expansion in accordance with the most wholesome rules of city life. Here is an abundant possibility not for New York alone, but for every city, great and small, and it is because this possibility exists and is a reality that the city structure should be studied and the utmost care taken in the development of the new districts.

But structural changes, after all, are not so potent in their effect as character changes. It is the men and women of the cities that make them. Humanity is largely influenced by its environment, and beautiful, splendid cities will attract better people and help to make them better than a city that is mean and sordid, ugly and ungainly. Every good building, every good street, every note of embellishment helps, just as every good work is an inspiration, and the mere contemplation of merit is meritorious. But beyond the externalities of the city is its soul, which is composed of the people living in it. That is what counts, and always has counted, and always will count. A community is not how it looks, but what its people are. The drafting board is a useful adjunct to town making, but the town itself will be made by the people who are attracted to it and pass their lives in it.

TALKS WITH ARCHITECTS

MR. F. L. V. HOPPIN ON THE HOUSE AND GARDEN.

AMONG the younger architects of New York few have obtained a more rapid success in the building of houses than Mr. F. L. V. Hoppin. His work, while including the various kinds of buildings that every architect of standing is daily called upon to design in the ordinary routine of his profession, has been distinguished by the designing of a number of modern dwelling houses, among which have been homes for Mr. Charles E. Cooper at Tuxedo, for Mr. Andrew C. Zabriskie at Tarrytown, for Mrs. Edith Wharton at Lenox, for General Greene at Newport, and a group of lesser houses—lesser in size and in cost, but full of genuine artistic interest—at Aiken, S. C. The larger houses just named are dwellings of the first rank in size, designed in a fine style of architecture, and embellished with stately and beautiful gardens. Other interesting work

house; he must, in a word, know everything. Of all the many things he is called upon to know, that which he should know best is how to lead his client as he should be led. The conscientious and well-trained architect is, of course, more competent to direct the design and construction of a house than even the best intended client, who may go through the operation once. The architect has need of an immense amount of tact, and he must know how to use it tactfully. The architect must, indeed, be intimate with his client, for he may be called upon to design closets for the hiding of the family skeletons.

"When it comes to the house problem in itself it is apparent that the chief point here is to make the house cheerful and interesting. The client must be interested in the construction of his home, and that interest should be kept alive, not only during the actual work of construction, but for the next two or three years. No house is built in a day, and the

way to accomplish this result than to place the house with reference to the garden; and that, as I have said, can be completed at any time."

"But what," I asked, "is the architect expected to know of garden-craft? What are his relations to the garden design, and how far is his work subordinated to that of the landscape gardener?"

"Pardon me," interrupted Mr. Hoppin hastily; "the architect is subordinate to no one save his client, and even the client must admit that the architect is leader in the creation of the house. To borrow a military comparison, the architect is the general of all the forces. His is the supreme command. Colloquially, he is the boss. Not in a hard, unreasoning sense, if you please; not simply to direct for the love of directing; but simply because no great undertaking can be carried out without competent direction; that direction, to be competent, must be general and complete. By the nature of his profession and by the work he is called



A MODERN MOORISH SMOKING-ROOM—RESIDENCE OF ALFRED MARSHALL, ESQ., MAMARONECK, N. Y.—See page 62.

MR. FRANK A. MOORE, ARCHITECT.

by Mr. Hoppin, who practises in conjunction with Mr. Terrance Koen, the firm style being Hoppin & Koen, include the Church of the Messiah, at Rhinebeck, N. Y., and two important city dwellings in New York, one for Mr. J. F. D. Lanier and another for Mr. M. S. Burrell. It is obvious, from this hastily compiled list, that Mr. Hoppin is thoroughly competent to advise and suggest in some of the more important questions relating to the house and grounds, and I eagerly availed myself of his courteous permission to talk with him for the BUILDING MONTHLY.

"The first thing an architect in active practise realizes," said Mr. Hoppin at the beginning of our talk, "is the enormous responsibilities under which he labors. An architect is one of the most responsible creatures in the world—or at least he should be; yet both he and his clients often fail to realize completely how great this responsibility is. Almost every conceivable question comes before the architect; he is called upon to decide a multitude of matters; he is expected to be familiar with every possible detail that enters into the designing and construction of the

longer the time spent on it the better it is likely to serve its purpose. The house may be finished, but the garden, which should embellish it and set it off, may naturally follow in a more leisurely manner. It is in such continued work that the client will find the keenest interest in his home. It is especially desirable that the interest of the women of the household be maintained in the dwelling.

"The garden is a source of constant pleasure to the householder and his family. Every house should be placed with reference to a specific scheme. This scheme should be decided upon at the outset and should form an integral part of the design of the house as a whole. It is by no means necessary that it should be carried out at once, or that work on it should be pushed to completion at the earliest moment. But it is essential for the obtaining of the best results that the scheme, the idea, the program—call it what you will—is fixed from the very beginning.

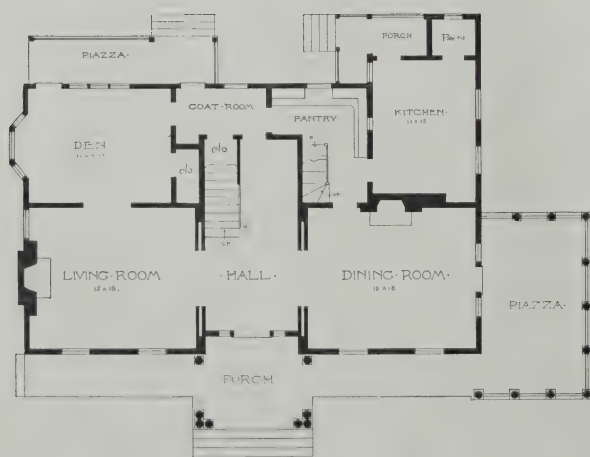
"And then the home should be homelike. A house is intended to be lived in, enjoyed, appreciated, used. It must not be a haphazard construction, but a real work of art, finished and complete. There is no better

upon to do the architect is the supreme director of all architectural undertakings.

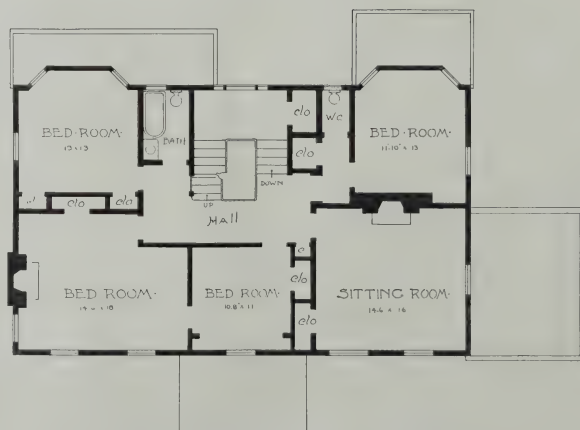
"As for the landscape architect his position is very clear. It is that of gardener or general garden contractor subordinate to the architect. His knowledge of trees, of plants, and of shrubs is certainly more intimate than the architect's is apt to be. He has his own place in most work of this description, but he can not supplant the architect as general director without detriment to the scheme of the house and grounds as a whole.

"My conception of a garden is an architectural garden, if the cost permits it, and the site and surroundings are capable of this treatment. It should be surrounded by high walls, for a garden should be compact and imply solitude; it is the owner's play place and is intended for his personal relaxation. It should be laid out on axial lines, and should be symmetrically designed, with at least one central line from the house. If walls are not possible all around they should enclose it on the sides. It should face the south and be protected from the north. It is not,

(Continued on page 61.)



FIRST FLOOR PLAN



SECOND FLOOR PLAN

"GREYSHINGLES," A RESIDENCE AT GLEN RIDGE, N. J.—See page 62.
 MESSRS. HORACE B. MANN AND PERRY R. MacNEILLE, ARCHITECTS.



A RESIDENCE AT SOUTH ORANGE, N. J.—See page 65.

MR. ROBERT S. STEPHENSON, ARCHITECT.



HALL.

"KNOLLCREST," A RESIDENCE AT FAR HILLS, N. J.—See page 62.

MESSRS. BORING & TILTON, ARCHITECTS.

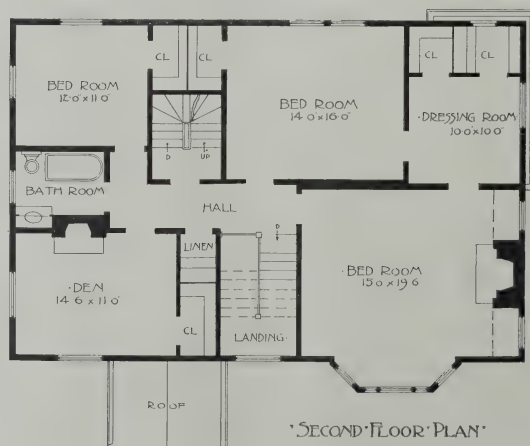
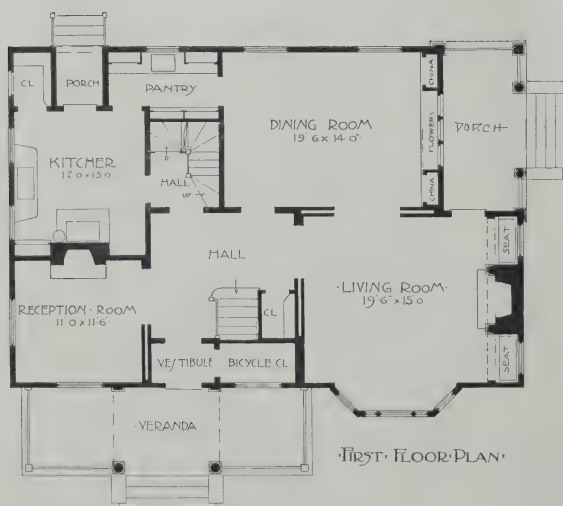


MUSIC-ROOM.



DINING-ROOM.

"KNOLLCREST," A RESIDENCE AT FAR HILLS, N. J.—See page 62.
MESSRS. BORING & TILTON, ARCHITECTS.



A RESIDENCE AT PLAINFIELD, N. J.—See page 63.

MR. A. L. C. MARSH, ARCHITECT.

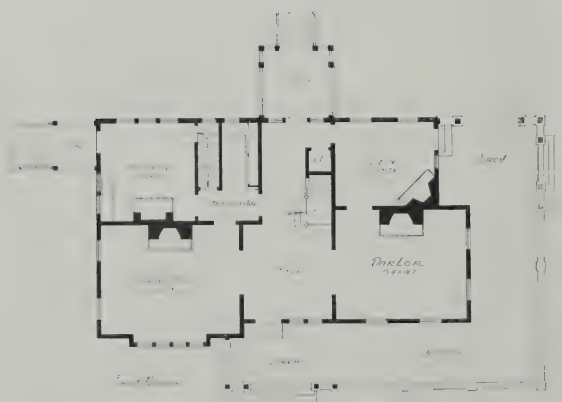


WALK ON THE ESTATE OF HORATIO GRINNELL, ESQ., NEW BEDFORD, MASS.

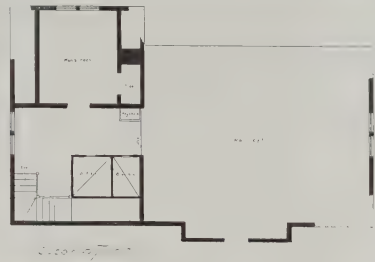
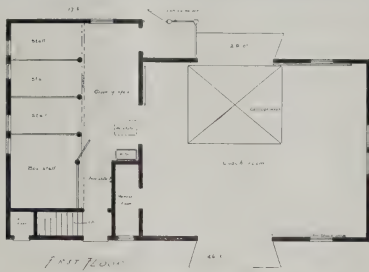


WALK ON THE ESTATE OF MRS. EDWARD C. JONES, NEW BEDFORD, MASS.

OLD-TIME GARDENS.—See page 65.

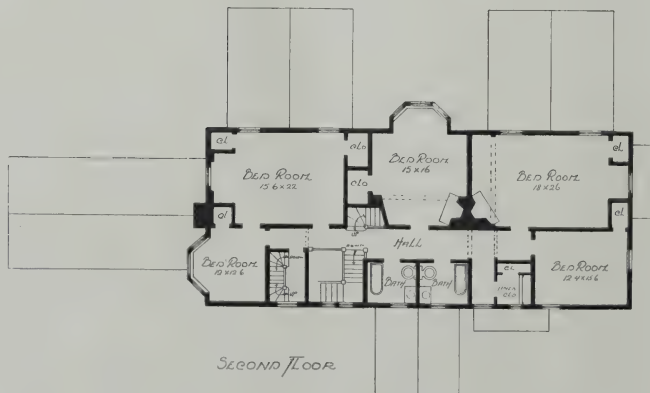
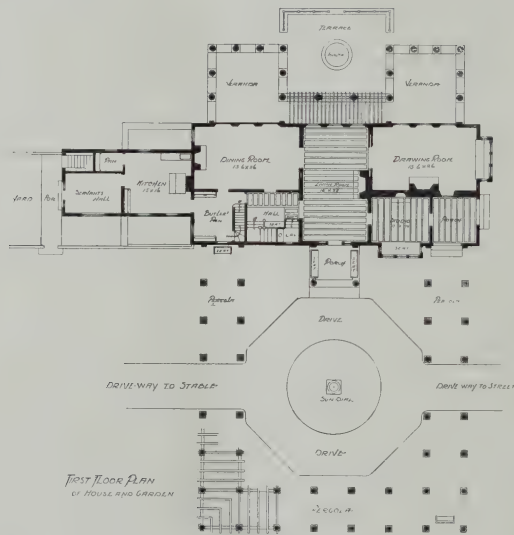


A HALF-TIMBERED RESIDENCE AT "ROCK RIDGE," GREENWICH, CONN.—See page 65.
MR. F. G. C. SMITH, ARCHITECT.



A RESIDENCE AND STABLE AT "ROCK RIDGE," GREENWICH, CONN.—See page 65.

MR. F. G. C. SMITH, ARCHITECT.



A RESIDENCE AT BELLE HAVEN, GREENWICH, CONN.—See page 64.
MR. WILSON EYRE, JR., ARCHITECT.



BAY WINDOW AT STUDIO.



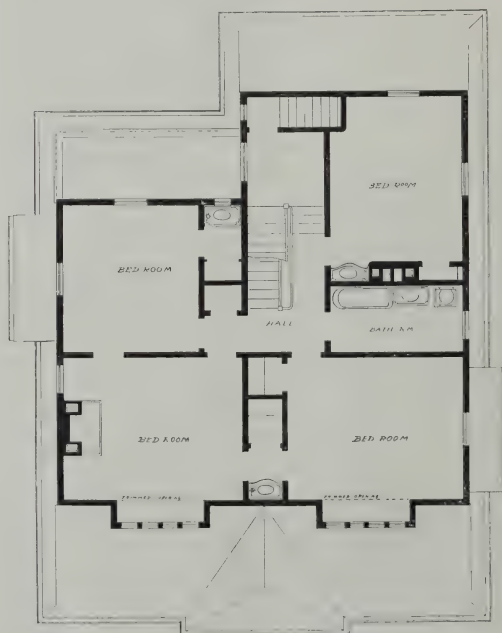
ENTRANCE PORCH.

A RESIDENCE AT BELLE HAVEN, GREENWICH, CONN.—See page 64.

MR. WILSON EYRE, ARCHITECT.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

A SWISS CHALET AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 63.

MR. JOHN J. PETIT, ARCHITECT.

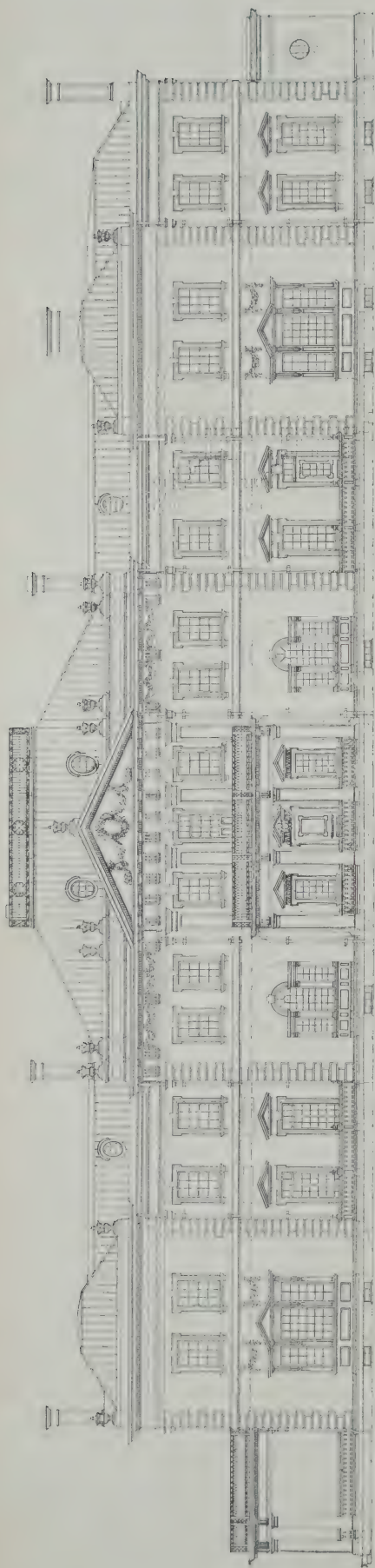


THE WEST GALLERY, LOOKING INTO THE CENTRAL GALLERIES.



A PART OF THE VANDERBILT GALLERY. THE LOPEZ-ROTH GRANT MEMORIAL.

THE ARCHITECTURAL LEAGUE EXHIBITION.—See page 65.



MR. ANDREW C. ZABRISKIE'S HOUSE AT TARRYTOWN, N. Y.—See page 64.
MR. F. L. V. HOPPIN, ARCHITECT.

MR. F. L. V. HOPPIN ON THE HOUSE AND GARDEN.

(Continued from page 47.)

of course, possible always to have these conditions, any more than it is always possible to design a house in a free manner and without reference to extraneous conditions. But these are some of the more desirable essentials to be observed in designing a formal garden. It is difficult to go far astray if these simple fundamentals are kept well in view.

"But above all there should be an absence of clutter. Some gardens are so filled with statues that they remind one irresistibly of a garden party in which the guests have forgotten to go home. Gardens should not be overcrowded with accessories, even when brought from Florence. A garden may very well have too many good things in it, and overcrowding of orna-

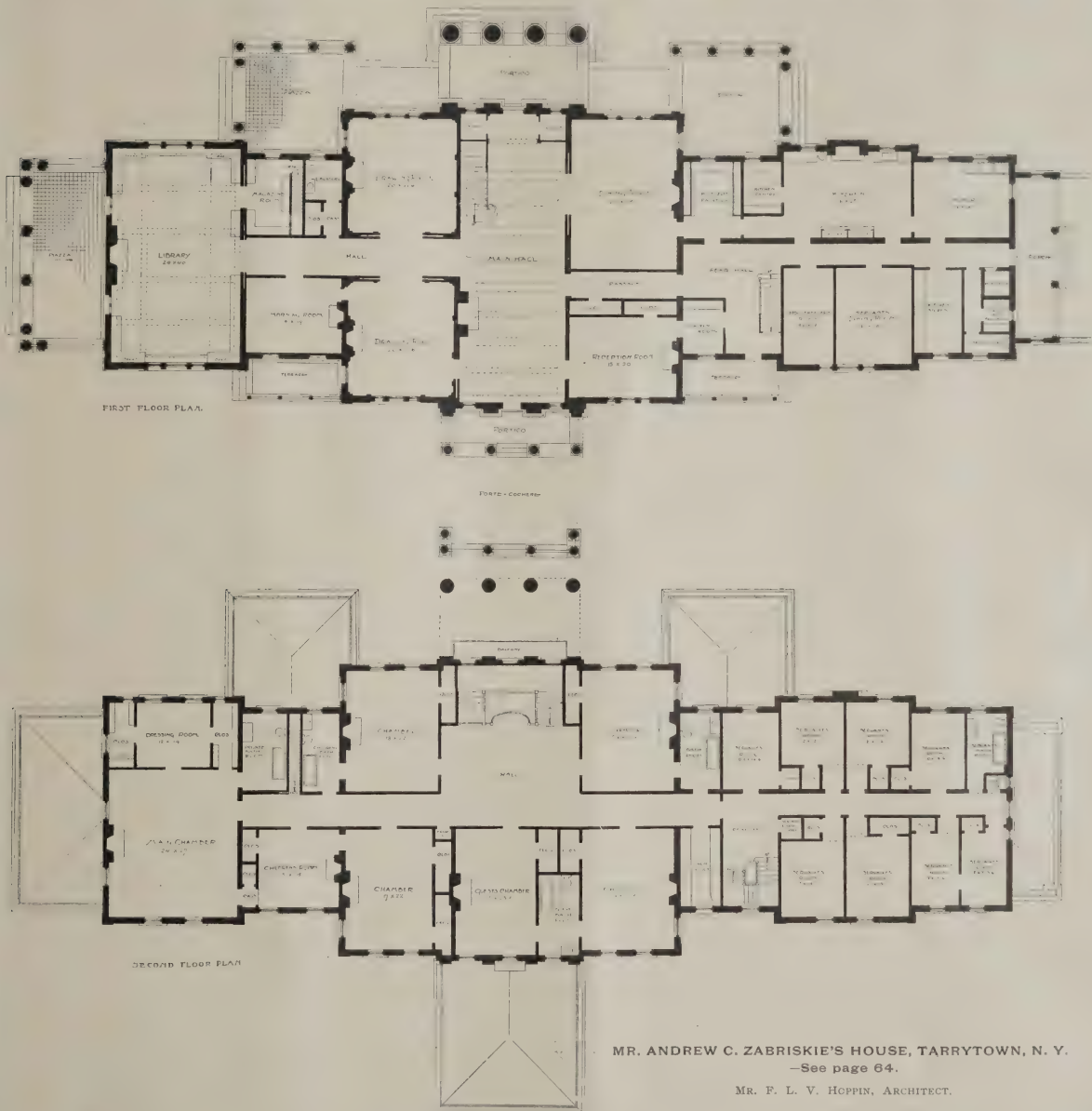
is where the gardener is valuable, and where his practical experience is most helpful.

"I think there is a real and genuine interest in gardens. They are not fads, although they may perhaps seem so in some individual cases. But people actually desire them, and desire them as essential adjuncts to their homes. More money is being spent in houses to-day than ever before. Very many costly houses, houses of great size, great cost, great price in embellishment and adornment. And there are many lesser houses being built which, while not so large nor so costly as the great houses, are higher in price and richer in appointments than their occupants may hitherto have been accustomed to.

"With this expansion in cost has come a greater garden appreciation, an appreciation that is at once greater and more real than anything that existed a

press; they should help to make the house more livable, and the man who pays for them should get the most benefit from his expenditure.

"The modern house, the house of to-day, is a most complex structure. People require more; more costly interiors are demanded; more conveniences are regarded as matters of course; more intelligence is displayed in the planning; the plumbing facilities are better; in a thousand ways houses are improved and bettered. Most of this is due to the architect, who is daily bringing more care and sounder training and ampler experience to his task. The secret of successful house designing is to retain the interest of the client in the operation. I have already spoken of that, but I must refer to it again. The client must not, on any account, be permitted to lose interest while paying endless bills, many for things of which he knows



mental detail should be avoided at any cost. Pergolas, for example, are very much overdone and overused, and not a few that every one is expected to admire are bad in themselves and not Italian at all.

"A very common error in the making of a garden is to proceed without a color scheme and without reference to the height of plants. Color, and the right use of color is so essential to the success of a garden that it is hardly fair to place it below the general plan or scheme in cataloguing the characteristics of the garden. It must be carefully studied and thought out, and the success of the garden as a whole will largely depend on the thoroughness with which this is done. Even so simple a rule that the higher plants should stand next to the bounding walls, with the lesser plants toward the border or interior of the garden is often violated, with strangely resulting effects. Here

few years since. A garden is a place of interest; it is the spot that belongs to the owner alone; it is the sancto sanctorum of the exterior of the house; it exists for the owner and his guests, and is a place of pure delight and endless pleasure. It is very costly, it is true, but if the expense can be afforded it more than compensates for the outlay.

"As for the house it is obvious that almost any house must have at least one front or one aspect that can be adjusted to the garden design. That, indeed, is essential, for both house and garden are properly parts of a single design. They are the parts that, together, constitute the whole. Yet they are often overloaded with material and often badly placed. At times they seem to be afterthoughts. As a matter of fact they should be near the house, exactly as they are a part of it. They should be under the eye of the mis-

nothing. He must have confidence in his architect, and the architect must have confidence in himself and in the merit of his work. All matters of art that are exterior to the house should be left to the architect. The interior is more distinctly personal to the owner. He must live in it, and his wishes, desires, inclinations, and tastes must be heeded in a more or less definite manner. But with the right architect, the man who knows his profession, and loves it, there can be little trouble. His tact must be inexhaustible, and he must know how to use it. Although I am speaking as an architect I do not believe that a client can have too much of his architect's services, nor can he profitably neglect advice that is based on training and experience. It is to give just this aid and to perform just this work that the architect practises his profession."

BARR FERRER.



UNSANITARY HOUSE FURNISHING.

THE main object in furnishing a house with due regard to the health of its inmates, says the Medical Record, is to provide as few receptacles for dust and for the propagation of microbes as possible. Modern hospitals and sanatoriums are constructed upon this principle. Mouldings, ceiling, and wall ornamentation and decoration are entirely dispensed with. The floor is smooth without interstices, guiltless of carpet, and made of a hard, highly polished wood. Every endeavor is made to render the interior of the building aseptic.

Carpets, and especially thick and heavy ones, are, in most instances, uncleanly, unhealthy, and unnecessary. In order to keep them in a sanitary condition, they must be frequently and thoroughly cleaned; and in towns, at least, even in the best houses, this is seldom done. In tenement houses carpets are no more nor less than a positive and constant source of danger to health. There is no need in any room to have the floor completely covered. Large rugs placed where necessary on a sound, well-polished floor answer the purpose as well as a large carpet, look better, and, above all, are decidedly more healthy. The tendency to crowd a house with furniture and works of art is both vulgar and contrary to the laws of health.

VESTIBULE FURNISHINGS.

VESTIBULE furnishings, says the Tribune, are ordinarily limited to hat rack, umbrella stand, overshoes holder, and mat. A piece of furniture not usual, but perfectly in keeping with the function of the vestibule, is a settle, chair, or stool, of simple construction, where the mean time occupant may remove or put on his overshoes. The vestibule walls are best plain tinted in some flat color, according to individual taste—neutral yellow or green is good. Then, with provision for proper lighting by day and night, the vestibule has the necessary business-like equipment referred to in the first talk.

NEW WALL-PAPERS.

Of new wall-papers there is no end. Some striking designs are in art nouveau papers. One represents a pathway winding through an orchard, and another a meadow by a lake, with boats floating on the surface of the water. A design on real grass cloth is a novelty. An arbor of roses with cloud effect overhead and groups of Easter lilies with overarching vista of sky are two new designs.

THE TREATMENT OF FLOORS.

FIVE floors must be properly prepared before a new stain is given, says Harper's Bazar. Repeated coats of stain or varnish carelessly applied in order to hide unevenly worn floors often but serve to accentuate the defects they were designed to conceal. Thought should be given, therefore, to the scraping off of such accumulations in order that a really clean surface and an even one (which will absorb the stain) may be given. Even old oak floors are better for being treated in the only way by which the amateur may hope to get a good surface for oiling and waxing. Soft floors, such as pine, require imperatively to be treated in this way. If from long usage, or from poor workmanship, cracks appear between the boards, they should be filled in with some good prepared filler, the surface of the floor having been first planed and scraped until even. Where means will permit, a wood-carpet or thin parquetry may be laid over a floor so prepared. All things considered, the outlay for such a covering is extremely low, the carpet for a medium sized floor in oak, or in oak and cherry wood-carpet, amounting to scarcely more than that for a good Brussels or other wool carpet, but with greatly to be preferred results. However, even where "money is no object," distance from a business center often proves an obstacle to the acquiring of such a "carpet." Those, therefore, who must restrict themselves to improving the old floor only, should begin the work at the beginning. "New patches on old garments" are not less ugly in their results than is new paint laid over a paint-patched old floor.

THE DEN AGAIN.

SCENE, a department store; persons present, a bride and groom from the country.

"What kind of a room do you call this?" demanded the man.

"This is a den," declared the bride, in a superior tone.

"What's a den?"

"A den—why a den is a Chinese idea; a place the Chinese fix up in their houses."

"Well," was the parting comment. "It's too dark and spooky for my taste."—New York Evening Post.

"GREYSHINGLES," A RESIDENCE AT GLEN RIDGE, N. J.

"GREYSHINGLES," the house of S. Raymond Roberts, Esq., of Glen Ridge, New Jersey, illustrated on cover and page 48, is an excellent example of the Colonial style, both in plan and exterior. Extreme simplicity throughout is the distinguishing characteristic of this house. The exterior is unbroken by bay windows or other projections, and thus the rigid simple lines of the true "Colonial" building are maintained. While the body consists of gray weather-beaten shingles, special care has been observed in the design of the trim to obtain an effect of great delicacy in all the mouldings, columns, balustrades, etc. This effect is further brought out by ivory white paint. The shutters have slats in the lower part only, thus producing the effect of the primitive heavy shutter.

One enters through a hall extending through the house with a large window on the landing. The stairs ascend in the simple Colonial manner, with the rail forming a complete turn at the base instead of a newel. At the left of the entrance hall is the parlor, with a large Colonial mantel directly opposite the entrance. The dining-room is at the right, the same size as the parlor, and opening from it a large, comfortable piazza with plaster ceiling, and enclosed in wire netting in summer. This is used in hot weather for afternoon tea, and even dinner can be served here, as it is free from intrusion. The parlor and dining-room are both light rooms, for there is no piazza across the front of the house.

The den behind the parlor has opening from it a small porch, which is enclosed in glass in winter and used as a conservatory. The coat room under the landing is large enough to be used for bicycles. The rear stairs go up from the butler's pantry to the landing. The kitchen has a combination coal and gas range, set against a breast of white enamel brick. The laundry is in the basement below the kitchen.

The second floor contains five bedrooms and a bath, and the third floor four bedrooms and a bath. White paint, mahogany stained doors, and the simplest designs in Colonial wall papers have been used throughout, and the whole house, as complete, makes a charming and comfortable home. Messrs. Horace B. Mann and Perry R. MacNeille, architects, 2 East Thirty-third Street, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

"KNOLLCREST," A RESIDENCE AT FAR HILLS, N. J.

On pages 50 and 51 are given illustrations of "Knollcrest," the country residence of John F. Dillon, Esq., at Far Hills, New Jersey.

The main part of the first story is constructed of stone with rock faces. The remainder of the building is built of wood, and the exterior framework is covered with shingles. The roof is also shingled. The plan shows a central hall, which is trimmed with oak, and has a massive wooden frieze and a beamed and ribbed ceiling. The staircase is provided with columns with Ionic capitals. The fireplace is built of rock-faced stone, with a breastwork extending to the ceiling.

The drawing-room is trimmed with mahogany. It has an open fireplace, furnished with a tiled hearth and facings, and a mantel carved and with shelf supported on caryatides. The music room is treated in white and gold, and is provided with fireplace, etc.

The library is the most important feature of this house. Bookcases are built in, extending up to the entire height of the ceiling, while the latter is beamed in a massive manner. There are several alcoves, which are provided with paneled seats, and one of these alcoves contains an open fireplace.

The dining-room is trimmed with oak, treated in the Flemish style, and has a paneled wainscoting, ceiling beams, and a fireplace of rock-faced stone, with the chimney breast extending to the ceiling and provided with a stone shelf supported on stone corbels. The butler's pantry, kitchen, and servants' hall are provided with all the modern conveniences.

The second floor contains seven bedrooms, six dressing-rooms, and three bathrooms, besides the four servants' rooms, which are located over the kitchen extension and are reached by a private stairway.

The third floor contains several bedrooms and ample storage. A cemented cellar contains a furnace room, a laundry, coal and wood bins. Messrs. Boring & Tilton, architects, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A MODERN MOORISH SMOKING ROOM.

A MODERN Moorish smoking room in the residence of Alfred Marshall, Esq., at Mamaroneck, N. Y., is shown on page 47. Mr. Frank A. Moore, Windsor Arcade, Fifth Avenue and Forty-seventh Street, New York, was the architect.

The engraving was made from a photograph taken specially for the BUILDING MONTHLY.



CATALOGUE SEASON.

CATALOGUE season has arrived—indeed, it has been with us for some weeks past. A hearty welcome to these forerunners of garden time! Few trade publications are so interesting, few so handsome, few so helpful, inspiring and altogether delightful. One turns their pages eagerly, looking for old friends and hoping for new ones. The latter may not always be as successful as they are promised to be, but there is perennial hope in garden experimentation, and the failure of one season is apt to be the success of the next. Plant and seed catalogues are true indications of spring, and even late snows and heavy storms must give way before the salubrious season their gay covers portend.

THE HOUSING OF GARDEN SERVANTS.

A RECENT account of the garden servants employed by Earl Cowper at Wrest Park, Bedfordshire, England, directs attention to one of the most interesting estates in England where the conditions of the employees appear to be particularly fortunate. Some of the gardeners have been employed as long as fifty-six, fifty-three, fifty-two, and thirty-two years, and form a corps of active, intelligent, and energetic men, seldom absent from their daily employment.

The married men are comfortably housed in several of the lodges in the park, and others in the beautiful and picturesque village of Silsoe, long renowned for its beauty and sanitary arrangements, also for its ample convenience as regards church, school, postal, and telegraph accommodation. The rents charged the garden employees for their cottages in the village are exceedingly low, but not quite nominal; and his lordship, with his usual generosity, when the allotment system was first introduced, had a large field in close proximity to the village laid out in allotments for the garden men and other workmen on the estate. Thus by successful cropping they can keep themselves well supplied all the year round with a bountiful supply of fresh vegetables, which are indispensable in the cottage of the peasant.

Another feature is the coal club maintained by the Earl, and the Countess's clothing club. The garden employees, etc., pay into these clubs weekly, and at the end of the year there is a substantial bonus added to their weekly subscriptions. By this means they are able to get in their yearly supply of coal during the autumn, besides a great many more household comforts.

HEATING ORCHID HOUSES.

MANY orchids are injured through an excessive use of fire heat. A common mistake in the heating of orchid houses is providing too little piping, with the result that the fires must be driven and pipes kept needlessly hot. Were the pipes more numerous, the heat of the water might be much less, with advantage to the plants. Moreover, the extra cost of piping is as nothing compared with that of fuel in endeavoring to keep up heat with too little heating surface. A recent writer makes some useful suggestions as to temperatures. It is not desirable, he says, to lay down a hard-and-fast rule in regard to temperatures, but the following figures will be found helpful. The higher figures are reached at noon, and the lower ones in the early morning, and in accordance with the state of the weather; and a few degrees lower than the lowest will not cause injury in very severe weather: East Indian house or stove, by day, 68 degrees to 75 degrees; by night, 60 degrees to 65 degrees. Cattleya house, by day, 62 degrees to 68 degrees; by night, 58 degrees to 62 degrees. Intermediate house, by day, 58 degrees to 62 degrees; by night, 55 degrees to 58 degrees. Cool or Odontoglossum house, by day, 55 degrees to 60 degrees; by night, 50 degrees to 55 degrees.

PLANT SANITATION.

THE general laws of sanitation in plants, says a writer in the Contemporary Review, do not differ very much from those laid down for preventive medicine in man or animals. They include the removal and destruction by burning of dead plants, or dead parts of plants, suffering from communicable diseases, as soon as the outbreak is noticed, and before it has widely spread; the prevention of conditions which favor infection; the isolation, by means of trenches, of plants whose roots are diseased; and the exclusion or quarantining of plants from infected countries. These are but examples of sanitary methods which should commend themselves to every practical man, and have been used with great success in numerous cases. They are, however, almost useless without an intelligent watching.



TREES AND SHRUBS IN CITIES.

The shape of trees for roadways, says a contemporary, should be pyramid tops on straight stems. Trees should be trained as much as possible to copy nature, each variety having its special requirements as to pruning. No trees should be planted nearer than twenty-five feet apart diagonally, but discretion must always be used both in distances and the variety of trees. A birch or acacia, for instance, would never spread like a chestnut, sycamore or plane, and hence would not take up the same amount of room or air space. In planting young trees choice should only be given to those trees having straight stems with perfect leaders; clean, well-grown stuff with fibrous roots. All trees should be done twice a year. With proper tools, a little knowledge and proper instructions one can train and keep any tree in bounds, but one must start when the tree is young, and if regularly done no one will notice that they have been cut.

It is not advisable to plant trees in business roads without very wide pavements, but if it is done the trees should be kept three feet from the curb and protected from hungry horses. Roots also should be looked after; when the pavement is too close to the tree and will not allow of swelling and water getting to the roots especial pains must be taken to remedy the evil.

LONDON SQUARES AND GARDENS.

The old city squares, such as abound in Bloomsbury, are one of the most delightful features of London. In a recent address Mr. Aston Webb, president of the Royal Institute of British Architects, pointed out that the new-fashioned gardens have taken their place; the difference being that while a "square" was bounded by a public road, and had the fronts of the houses facing it, the "gardens" have no surrounding road, and the backs of the houses abut immediately upon it. The result is that while the square adds greatly to the variety and beauty of the streets, the gardens are entirely hidden away; and might be non-existent as far as the public thoroughfares are concerned. It is well known, adds a contemporary, what some of these so-called "gardens" are like—ill-kept pieces of grass and a few trees, overlooked by ill-furnished back windows, in which few of the occupants take any pleasure. But they need not be so. There is no reason why houses should not be built round plots of garden ground, with one open side to the roadway, which would be refreshing not only to occupants of the house, but the tired and jaded Londoner as he goes backward and forward, and would prevent the stagnation of air complained of. There could be a private archway entrance through each side of the square or blocks of houses.

Unfortunately, building speculators and local authorities have only one idea of building, and that is, a long, straight street, with strips of garden, often back yards, behind the houses, and these in their turn back on to another range of gardens and houses which face another street. What one should like to see is such a back space thrown open by the removal of all the party fence-walls between the gardens or yards except a strip left near the houses, and the center space laid out and made into a private garden. By this means we should have, instead of a number of strips of ground or gardens—ill-kept, damp, and useless to the majority of the residents—a central open laid-out garden that would be an attraction to the neighborhood.

The British tenant has not yet awoken to this idea of social life; his house, "his own castle," is too strongly rooted in him to enable him to accept such an alternative, and so he goes on building houses with back gardens that are seldom much use to the majority of the occupants.

THE "FAMILY HOME" IN GLASGOW.

The City of Glasgow, which is well to the front in all matters of civic embellishment and progress, has adopted no more radical a proposal than a "Family Home," established by the municipality and intended originally for both widowers and widows with families, the idea being that the children could be cared for there by responsible persons while the parent went out to work. The development of the idea, however, contained results which were not in the municipal programme, and the widows were got rid of, accommodations being now available only for widowers. But at no time, it is said, has the home been more than three parts full; and whether a municipality should devote the public funds to any such enterprise at all is open to question.

A SWISS CHALET AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

The Swiss chalet which is illustrated on page 58 has been built for Dr. G. H. Watson, at Prospect Park South, Brooklyn, New York.

The underpinning and chimney are built of a grayklinker brick. The main building is constructed of wood, and the exterior framework is covered with a matched sheathing, good building paper, and then with seven-eighths inch by eight inch rabbeted mill-sawn clapboarding. This clapboarding is stained a dark brown, warm in its coloring, and the trimmings are painted a deep cream white. The roof is covered with shingles, and is stained a dull moss green. Dimensions: Front, 40 ft.; side, 42 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall is a central one, and is trimmed with oak, treated with an antique finish. It contains a staircase of similar oak, which is designed in the Swiss Gothic style. The drawing-room is treated in the Louis XV. style, with furniture to match. An attractive feature of this room is the ingle-nook, which is furnished with an open fireplace, provided with a white enamel tiled hearth and facings and a mantel. On either side of nook there are paneled seats, and the whole is separated with columns and an archway. The library is treated like the hall, and is separated from the latter with columns supporting Gothic arches. The open fireplace has green tiled facings and a hearth and a Gothic mantel.

The dining-room is treated in the old Dutch style with oak. The walls from floor to the ceiling are paneled, and the ceiling is beamed, while the spaces between the beams are filled in with crimson burlap. The whole of the woodwork is stained and finished in a dark Flemish oak. At one side of the room there is a massive shelf supported on corbel brackets, over which there is a china cabinet provided with leaded glass doors. The nook used for a breakfast-room is an attractive feature. The butler's pantry is fitted up with sink, drawers, dressers, and cupboards. The kitchen is fitted up with range, cupboards, sink, bicycle room, and ice box complete.

The second floor is trimmed with white pine and is treated with white enamel paint. There are four bedrooms, with closets and lavatories in each room, linen closet, and a bathroom furnished with a tiled floor and porcelain fixtures and exposed nickel-plated plumbing.

There are four bedrooms and a bathroom on the third floor. The cellar, cemented, contains the laundry, furnace room, trunk room, etc. The house was built by Dean Alvord, of 257 Broadway, New York, and was designed by Mr. John J. Pettit, architect, 11 East Thirty-third Street, New York city, N. Y.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

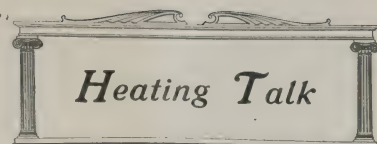
A RESIDENCE AT PLAINFIELD, N. J.

The residence which is illustrated on page 52 has been erected for H. W. Beebe, Esq., at Plainfield, New Jersey.

The building is of a modified Colonial type. The underpinning is built of red Harvard brick, laid with Flemish bond in red mortar. The superstructure is of wood, is covered with clapboards, and is painted Colonial gray with white trimmings. The roof is covered with shingles and is stained a moss green. Dimensions: Front, 46 ft.; side, 33 ft. 6 in., not including front porch. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The hall contains a Colonial stairway with fluted columns, newel, and turned balusters painted white, the rail being of mahogany. The remainder of the woodwork in hall is treated with ivory white paint. The reception-room is trimmed with white pine and is treated with white enamel. It contains an open fireplace furnished with tiled facings and a hearth and mantel of Colonial style. The living-room is trimmed with white wood stained a dull black, while the walls are covered with red burlap with harmonious effect. A special mantel, faced with Dutch tile and with a red Welsh tile hearth, is at the end of room. There is also an attractive nook with seats. The dining-room is treated with white enamel, and it has a high blue burlap wainscoting extending up to a plate rack. There are china closets with leaded glass doors built in at one end of the room, with flower shelf and window placed between the same. The butler's pantry and kitchen with its dependencies are furnished with all the best modern conveniences.

The second story is trimmed with pine and treated with white enamel. There are four bedrooms, with ample closets, and also a bathroom furnished with porcelain fixtures and exposed nickel-plated plumbing on the second floor. There are two bedrooms and ample storage room on the third floor. There is a cemented cellar under the entire house, containing a laundry, furnace, and coal and wood bins. Mr. A. L. C. Marsh, architect, 97 Nassau St., New York, N. Y.



HEATING A VILLAGE HOUSE.

ALTHOUGH hot air furnaces, hot water and steam are invading the country, yet the majority of village houses are stove heated, and as a result of defective arrangement are very poorly heated, especially when the mercury falls below freezing, says Dr. Harvey B. Bashore, in the Sanitarium.

In stove heated houses the halls are always cold, and in addition, even in the rooms containing stoves, the floors are from 6 to 8 degrees colder than the temperature 4 or 5 feet above, a fact easily proved by experiment. As a consequence one's feet are just so much colder than head and shoulders. These two defects, cold halls and floors, are certainly factors in producing catarrhal inflammation of the throat and nose, if nothing worse. To reduce these defects to a minimum, it is necessary to alter somewhat the construction of the rooms. Every one knows the value of the open grate, not so much as a heater, but as an equalizer of room temperature, and herein lies our remedy. Every room should have such a grate or its equivalent, simply an air shaft connected with the chimney, and opening into the room at the floor level. An air shaft so arranged, and of suitable dimensions, answers almost as well as an open grate, and furnishes the means whereby rooms may be heated very well with ordinary stoves.

When a room which has no fireplace is heated the heated air rises and spreads along the ceiling in a thick cloud, and if a window is opened the warm air rushes out before it has done much good; if, on the other hand, there is an open grate, some of the hot air, escaping up the chimney, creates a partial vacuum; this, consequently, creates in the room a movement toward the opening and the upper heated air is more diffused about the room, making the temperature more uniform.

The halls, whether they contain a stove or not, should have an air shaft, for it will assist somewhat in "sucking out" the heated air of the adjoining rooms. A small oil heater, placed in the lower hall, will be of assistance in keeping the hall temperature at the right point.

LOSS OF HEAT IN WALLS.

SOME walls as we find them in ordinary construction will cause a greater loss than others, says a writer in the Metal Worker. For instance, a greater loss will be found in a wall that is plastered directly on bricks or stones than where it is stripped out and the plastering done on wood lath. Greater heat loss will occur in frame buildings where little or no building felt is used than where goodly quantities, properly applied, are used. The more intimately acquainted the heating engineer or contractor becomes in general with the various materials used and methods pursued in buildings, and the more knowledge he has of the character of construction of the particular house or building with which he is or may be concerned, the more able will he be to understand just what heat losses he may expect.

In most sections of this country at least ten per cent. more loss is to be expected from northern or western exposures, consequently due allowance must be made for such exposures. Where winds of considerable velocity occur such exposures will occasion a much greater loss than the more protected quarters. The purpose for which the building is to be used and whether the building is heated continuously, during the day time only or at intermittent periods, should receive consideration. When the building is heated during the day only 20 to 30 per cent. more heat will be required, and in case it is only heated intermittently (a few different days a week) from 40 to 50 per cent. more heat will be required than when the building is continuously warmed. In making any calculations as regards the area of heat flues much depends on the temperature of the heated air flowing through the heat flue. In fact, in making any such calculations the temperature of the incoming air must first be determined upon, as each cubic foot of air at different temperatures absorbs a certain number of heat units.

SIDE WALL REGISTERS.

SIDE wall registers, many of them of special design, came largely into use last year. Their makers, says a critic, would do well not to advocate the use of more than one register to each pipe, if they expect to permanently popularize them. Owing to their construction and the use of large piping in connection therewith many dealers have formed the bad habit of putting two and even three registers on one pipe, whereas it will be found more satisfactory to the user of the apparatus to conform to the general practice of using one register to each pipe.



SUGGESTIONS FOR CITY WAREHOUSES.

A WAREHOUSE fire in London last summer, which resulted in a considerable loss of life and demonstrated the general inefficiency of the London Fire Department, has directed fresh attention to the necessity of safeguarding city structures of every sort in the most thorough manner possible. A late critic of this catastrophe makes some pertinent suggestions concerning the construction of city warehouses, basing his conclusions on the results of this fire. He proposes that all supporting piers should be constructed, where practicable, of brick; that all roofs should be flat and of fire-resisting construction; that all windows should be protected by fire-resisting shutters or wired glass; that all floors should be fire-resisting, and all iron girders, columns, and supports be protected by special plaster or hollow tile covering and not tied into walls; that all staircases be enclosed by at least a 9-inch wall carried up to the roof, and any openings on to the same be filled with fire-resisting doors; that all elevators be enclosed with at least a 9-inch wall, and carried up through the roof and covered with a skylight of light iron and glass, and all openings on to the several floors be filled with fire-resisting doors.

HOW TO ESCAPE FROM A FIRE.

CHIEF SWINGLEY, of St. Louis, Mo., has, in a newspaper report, made some suggestions on ways to escape from a fire.

If cut off from escape one should shut the door of the room in which one is and make for the nearest window.

The best way is to crawl. There is always a space next the floor where the air is good. Smoke always rises. I don't care if a building is filled with dense smoke, a window can be reached by crawling and keeping the head close to the floor.

Persons should get on the outside of the window. The room may be filled with fire, but it will take some time before the fire reaches them. Persons should wait until their clothes catch on fire before jumping. It is almost sure death to jump.

Burning buildings do not fall immediately. They are generally burning at least half an hour before they begin to fall. Even if the building does begin to fall, the portion where one is may not fall. A person always has a chance by remaining.

With our pomper system we can scale the highest building if there are windows to which to attach the ladders. One of our missions is to save lives, and when we see persons in danger every effort will be made to save them.

Of course, when persons are placed in great danger, minutes seem like hours. The engines get to fires in the majority of cases within a few minutes after the alarm has been given.

Another thing that I am reminded of is the fact of how few persons know the location of the fire-alarm box nearest to their residences, and how to give an alarm. Every one should familiarize himself with the location of the box and how to turn in an alarm.

LIGHTNING CONDUCTORS.

WE must no more expect, says a recent authority, a lightning conductor placed at one end of a long, flat structure to attract lightning to that particular point than would a rainfall pipe attract the rain. Not on account of gravity, but owing to other laws just as certain, we know that there are places on a building where lightning may strike just as surely as that there are slopes down the roof that rain will go down; and as in the one case we have to arrange rainwater gutters and pipes in the necessary directions, so that the water may be carried safely away, instead of its going through the building, doing damage, etc., so in the other we have to consider the parts that lightning may strike, and arrange our conductor system so that this terrible force shall pass harmlessly down the lines we have provided for it, instead of tearing its way through the structure, causing ruin and possible death.

No absolute, fixed rule can be laid down. The course of the conductors must be planned with due regard to other metals, lead flashings, rainwater pipes, and interior ironwork. In some buildings separate conductors may be necessary from each vulnerable point; in others, branch conductors may be formed, carried by one or more conductors to earth. The question would be simplified if the architect considered the matter earlier, and having decided on the best position of conductor, arrange that no other metals are brought near, which it might not be advisable to connect to it.

A RESIDENCE AT BELLE HAVEN, GREENWICH, CONN.

ON pages 45, 56, and 57 is illustrated the residence erected for Frank Squier, Esq., at Belle Haven, Greenwich, Conn. It is unusual in its style, and while treated with the Colonial feeling. It has classic porches with Doric columns at the front entrance and two porches at the rear of the house, the latter being separated by a grass sward pierced with a Macmonnies basin. The approach to the house is reached through the garden square, in the center of which is the sundial, and the whole surrounded by the classic pergola composed of Doric columns, and which are now covered with vines.

The building rests upon a stone foundation, while the underpinning is a low one built of rock-faced bluestone. The superstructure is of wood, and the exterior framework is covered with matched sheathing paper and clapboards. The whole is painted white, and the blinds are painted a Venetian green. The roof is covered with shingles and is left to weather finish. Dimensions: Front, 106 ft.; side, 30 ft., exclusive of porches. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 9 ft.

The entrance is into a broad, spacious hall, central in location, and containing a paneled wainscoting of white enamel, finished with mahogany cap, a beamed ceiling, and an open fireplace with soapstone facings, and a hearth and a mantel of Colonial style, with enameled face and a mahogany shelf supported on Ionic columns. The staircase hall is separated from the hall proper by an archway, and it contains a very handsome staircase of Colonial style, with enamel treads, risers, and balusters, and a mahogany rail.

The drawing-room is treated with white enamel, and has a low Colonial base and cornice, a bay window with a platform, one step rise, and a paneled seat. The open fireplace is provided with a white enameled mantel, a mahogany shelf, and soapstone facings and hearth. The studio is provided with a bay window with a paneled seat, a paneled wainscoting, a beamed ceiling, and an open fireplace, treated in harmony with the other apartments.

The dining-room, of unusually large dimensions, is provided with a paneled wainscoting of white enamel finished with a mahogany rail. The remainder of the trim in the dining-room is treated with white enamel. The dining-room is furnished with casement French windows extending down to floor, and opening on to porch, and a Colonial mantel, of white enamel, with a mahogany shelf. The butler's pantry is provided with bowl, dressers, cupboards, and stairs to cellar and to the second floor. The kitchen has a white glazed tiled wainscoting, and it contains range, sink, pantry, and all other necessary conveniences, besides a servants' hall.

The second floor contains five bedrooms, large, well-fitted closets, linen closet, and two bathrooms. This floor is trimmed with white enamel. The bathrooms are furnished with tiled wainscoting and paved floors, porcelain fixtures and exposed nickel-plated plumbing.

The third floor has three guest rooms, trunk room, and bathroom, besides three servants' rooms and bathroom, which are separated from the former and have a private stairway. There is a cellar under the entire house, and it contains two furnace rooms, fuel bins, laundry, etc., complete. Mr. Wilson Eyre, Jr., architect, 929 Chestnut Street, Philadelphia, Pa.

MR. ANDREW C. ZABRISKIE'S HOUSE, TARRYTOWN, N. Y.

THE new house for Mr. Andrew C. Zabriskie, recently built by Mr. F. L. V. Hoppin, architect, 244 Fifth Avenue, New York, at Tarrytown, N. Y., and illustrated on pages 60 and 61, is not only a fine example of the architect's skill, but one of the most interesting houses recently erected overlooking the Hudson. Unlike most of the great dwellings in that beautiful region, the longer side or main front of the house is at right angles to the Hudson River, instead of facing it.

It happens that most of the dwellings that face the river are rendered almost uninhabitable by the intense sun that beats down on them in the hot summer afternoons. It is frequently impossible to use the rooms on that front. In the Zabriskie house the difficulty is avoided by the simple expedient of fronting the house the other way. The end toward the river is provided with a deep porch, so that the room which adjoins it is itself well shaded and amply protected.

The plan of the house provides a large central entrance hall. Toward the river are two large drawing-rooms and an ample library. On the other side is the dining-room, kitchen, and dependencies. The second floor is filled with bedrooms. The house is extremely large, the chief apartments being stately rooms of great interest and beauty.

An elaborate formal garden has been planned to reach from the house down toward the river. This has been designed in terraces to meet the requirement of the site, and, when completed, will be one of the most interesting terrace gardens in the near vicinity of New York.



MODERN GERMAN ARCHITECTURE.

THE madness and eccentricity of German architecture, remarks a recent English writer, are perhaps oftenest seen in restaurants, places of amusement, and business premises. Modern German church architecture, too, is apt to be more eccentric and fussy than devotional and dignified. Most of the new churches are built in a hard Gothic style, which is neither truly medieval nor in harmony with the life of the present day. The plans of many of these new churches are, however, very good. It seems to have become very generally recognized that a wide central area is best fitted for modern worship, and the anachronism of the long nave, aisles, and transepts is almost entirely abandoned. Where these features are retained they are shortened and curtailed in such a way as to make them almost non-recognizable. It is very likely by reason of this modernizing of the plan that the exterior of the churches, where no such modernizing has taken place is often so unsatisfactory and distressing. Red, yellow, and multi-colored bricks are often used in the building of these churches, with anything but pleasing results, the effect being reminiscent of the toy churches of our nursery boxes. In domestic architecture the German love of show is perhaps more evident than in their public buildings. A certain amount of display is required of a public building, but we do not ask it in a private residence, yet the houses one sees in the suburbs of the great towns and in the country are generally characterized outside by a pretentiousness and a lack of homeliness and real comfort within that is hardly compensated for by lavish expenditure or real excellence of workmanship. Many of these defects have corresponding advantages. If the German does not understand the art of building a home, he understands the art of building a street and laying out a town. If his public monuments are not always of great artistic merit they are usually well placed and part of a well-thought-out scheme. Berlin has been assuming of late years all the outward and visible signs of the chief city of a great and powerful empire. With small natural advantages it has made the most of them. This laying out and embellishing of a city is a different thing from architecture, and yet the two can not be disjoined.

There is a great deal of building going on in German towns that is quite free from any taint of the eccentric. The academic school, if sometimes lifeless, is never mad, and often, as in the Leipzig Courts and the Berlin Marstall building, it is expressive, living, and refined. It is by pursuing this academic path that German architecture will find its salvation. It may move slowly, for as yet the Germans as a nation are but young and are not out of the play-acting age. When, however, the period of self-consciousness is past we may hope for a nation as strong in artistic taste as in the power of arms.

MR. FREDERICK HARRISON ON THE CAPITOL AT WASHINGTON.

MR. FREDERICK HARRISON, the noted English writer and thinker who visited America a year ago, has recorded some interesting views on American architecture.

The Capitol at Washington, he says, struck me as being the most effective mass of public buildings in the world, especially when viewed at some distance and from the park in which it stands. I am well aware of certain constructive defects which have been insisted on by Fergusson and other critics, and no one pretends that it is a perfect design of the highest order either in originality or style. But as an effective public edifice of a grandiose kind I doubt if any capital city can show its equal. This is largely due to the admirable proportions of its central dome group, which I hold to be, from the pictorial point of view, more successful than those of St. Peter's, the cathedral of Florence, Santa Sophia, St. Isaac's, the Pantheon, St. Paul's, or the new cathedral of Berlin. But the unique effect is still more due to the magnificent site which the Capitol at Washington enjoys.

I have no hesitation in saying that the site of the Capitol is the noblest in the world, if we exclude that of the Parthenon in its pristine glory. Neither Rome, nor Constantinople, nor Florence, nor Paris, nor Berlin, nor London, possesses any central eminence with broad open spaces on all sides, crowned by a vast pile covering nearly four acres and rising to a height of nearly 300 feet, which seems to dominate the whole city. Washington is the only capital city which has this colossal center or crown.

THE ARCHITECTURAL LEAGUE EXHIBITION.

The Eighteenth Annual Exhibition of the Architectural League of New York, held from February 15 to March 8, well maintains its reputation as the most important architectural exhibition of the year in America, and, indeed, competes very fairly with the exhibitions of the Royal Academy in London and the Salon in Paris. The Salon is a much larger display of truly architectural drawings, and hardly competes with the somewhat miscellaneous character of the shows of the League; the Royal Academy exhibition is limited to a single room, and is admittedly one of the dreariest places in the annual art show in Burlington House.

The Architectural League, as is well known, is a composite body, composed of architects, decorators, and sculptors. Its exhibitions cover the three fields, and include, in addition, a quantity of smaller work, vases, book covers, wall papers, and the like. It must be admitted that this portion of this year's exhibition is notably weak; the arts and crafts movement appears to be no longer patronized by the League, and at least it is not well represented in its exhibition. This is clearly a distinct loss, since this movement is still active, forceful, and helpful in many ways.

The arrangements of the exhibition are very similar each year. The first large gallery is given up to works of a decorative character. The walls are filled with a brilliant display of cartoons, sketches, and fully completed work, and show a collection of very real interest. The most notable exhibits here are a series of drawings by Mr. E. H. Blasfield for a music-room in New York. A photograph of the completed decoration is shown, but greater interest is naturally excited by the very beautiful drawings and studies just as they came from the artist's hands. They are drawings of extraordinary beauty and finish, and have a graphic charm of great intensity. They would give distinction to any art exhibition, and form the most notable contribution to the present one.

Sculpture is not well represented in the exhibition. One or two large pieces are shown, including Charles Albert Lopez's full sized model for his statue of Mahomet for the Appellate Court House in New York. But this work is no longer new, although of much interest. More striking is the same sculptor's project for a monument to General Grant to be erected in Washington, D. C. In this he was associated with Mr. F. G. R. Roth, a brother sculptor, and Mr. Henry Hornbostel, the architect. The design is two great Corinthian columns, before which stands an equestrian statue of Grant—a proposal well conceived, yet hurt by the architectural accessories. A model for the Hawkins Memorial for Pittsburgh by Mr. William Couper, architect, and Mr. A. R. Ross, architect, is very fine and impressive. Illustrations are given on page 59.

The larger part of the architectural drawings is placed, as is usual, in the great Vanderbilt Gallery. Here also are gathered models of monuments and houses and one or two public buildings. Conspicuous place is assigned to designs for the new bridges over the East River, New York, sent in by the Department of Bridges, a set of very beautiful and extraordinarily clever drawings, and remarkable as being evidence of a desire to improve the art quality of our city bridges. Drawings for the Art Building at the St. Louis Exposition by Mr. Cass Gilbert are also prominent in the Gallery.

Not much is given in the way of house architecture, great or small, or even of country houses; perhaps least of all of city houses. Gardens are shown in a number of rather indifferent drawings, and the whole domestic side of the exhibition is positively weak. This may mean either that fewer houses are being built or the architects are indifferent to showing them. For a number of years past the tendency of architects has been toward large buildings—when they could get them—and the house has seemed to have dwindled in their estimation. The average visitor, however, must feel that the house, after all, is a most important part of current architecture, and wonder that it is not more freely shown.

Large city buildings, public buildings, great office buildings, and large hotels are illustrated in a variety of ways, and yet without many strong examples—strong buildings that impress the visitor as really notable achievements in architecture. Some interesting armory buildings are shown for New York, some of them in quite a new cast of architecture for such structures, and welcome innovations in modern work. Churches, likewise, are of various merit, although this is a phase of architecture of which there is much need for improvement.

In addition to the architectural drawings in the Vanderbilt Gallery the exhibition includes a large collection of drawings made for the competition for the New York Juvenile Asylum, a really notable enterprise, here shown very fully and forming one of the most valuable features of the exhibition. Other work includes school drawings, drawings entered for competitions conducted by the League, models for a sun-

dial, and a competition exhibition conducted by the Society of Beaux Arts Architects.

If the exhibition does not indicate progress—progress that can be felt if not measured—it certainly has not fallen behind the achievements of previous years. Exhibition Committees must take what is offered them and when it is offered, and the absence of any architect from an annual exhibition may be no evidence that he has not had an abundance of commissions. On the whole the exhibition is a good one, full of interest, and with many works of real value in it. It certainly is an impressive object lesson of the everyday work of the contemporary architect.

A HALF-TIMBERED RESIDENCE AT "ROCK RIDGE," GREENWICH, CONN.

The engravings shown on pages 54 and 55 present a residence of stucco and half-timbered treatment, which has been erected for George C. Chaffee, Esq., at "Rock Ridge," Greenwich, Conn.

The underpinning is constructed of red brick laid in red mortar. The framework above is beamed, forming panels, which are covered with expanded metal lath. This metal lathing is then given two good coats of cement plaster. This plasterwork is left in its natural state, while the trimmings are stained a soft brown color. The roof is covered with shingles and is painted red. Dimensions: Front, 46 ft. 6 in.; side, 30 ft., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The entrance is through a Dutch door into a square hall, and with the staircase hall, practically extends through the entire depth of the house. This hall, as well as the entire house, is trimmed with cypress, treated in its natural state, and it has a paneled wainscoting and a beamed ceiling. The staircase is of an ornamental character in the Colonial style.

The parlor is treated with white painted trim and green walls. It contains an open fireplace with a tiled hearth and facings and a mantel of Colonial style. The den is treated in forest green, and is provided with an open fireplace built of brick, with the facings and a hearth of the same and a mantel of quaint and dainty design. The dining-room is treated with Flemish oak, and has a paneled wainscoting and a beamed ceiling. The fireplace is built of brick, with the facings and a hearth of the same, with a mantel-shelf supported on wrought-iron brackets. The butler's pantry is fitted up with drawers, dressers, and bowl. The kitchen is furnished with a sink and a fireplace for range.

The second floor is treated with a natural finish. It contains five bedrooms, with large closets, and a bathroom, furnished with a wainscoting. The entire walls and ceilings are treated with white enamel, and it contains porcelain fixtures and exposed nickelplated plumbing. There are three bedrooms for the servants' quarters and an open attic space for storage. A cemented cellar contains a furnace room, laundry, coal bins, etc. Mr. F. G. C. Smith, architect, 315 Madison Avenue, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A STABLE AT "ROCK RIDGE," GREENWICH, CONN.

The stable presented on page 55 has been erected for N. B. Chaffee, Esq., at "Rock Ridge," Greenwich, Conn. The building is entirely of the half-timber style, with a foundation of stone, leveled off with a brick underpinning at the grade. The building above is of wood, and the exterior framework is covered with expanded metal lath, and is then coated with cement stucco in the panels, which are formed by beams that are stained a dark brown color. The roof is covered with shingles and painted red. Dimensions: Front, 46 ft. 6 in.; side, 28 ft. Height of ceilings: First story, 11 ft.; second, 8 ft. 6 in.

The interior throughout is trimmed with North Carolina pine, finished natural with hard oil, and it is furnished with all the best modern conveniences. The carriage room, 22 ft. by 28 ft., is provided with ample space for carriages and a carriage wash, and also a harness closet, provided with glass harness cases. The stable contains three single stalls and one box stall, furnished with the usual ornamental iron fixtures. There is also a tool house on the first floor, with an outside entrance thereto. The second floor contains a man's room, feed bins, and hay loft. Mr. F. G. C. Smith, architect, 315 Madison Avenue, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

A RESIDENCE AT SOUTH ORANGE, N. J.

The residence at South Orange, N. J., which is shown on page 49, has recently been completed for William Barr, Esq.

The building is treated with Colonial detail and with massive plaster effect. The corners and the front gable have fluted pilasters with Ionic capitals. The underpinning is built of red brick laid in white mortar. The superstructure, of wood, is covered on the exterior

framework with matched sheathing and then shingles, which are left to weather finish a natural silver gray color, while the trimmings are painted a cream white. The roof is also covered with shingles and treated in a similar manner. Dimensions: Front, 63 ft.; side, 42 ft., exclusive of piazza and porch. Height of ceilings: Cellar, 7 ft. 7 in.; first story, 10 ft.; second, 9 ft.; third, 9 ft.

The principal characteristic of the house is the hall with its columned effect. The columns rise up and support massive beams which extend across the ceiling. There is a broad and spacious vestibule, with columns on either side of entrance and small windows on either side of the front door, which are glazed with glass of Colonial design. The hall is treated with white enamel, and it has a paneled wainscoting. The open fireplace has a hearth and facings of Roman brick, and a mantel of Colonial style. The staircase, sweeping up with mahogany rail, is an attractive feature of this hall.

The reception-room is treated with ivory white, and has an open fireplace furnished with tiled facings and a hearth and a Colonial mantel. Sliding doors separate the reception-room from the library. The library is trimmed with cypress and is treated with a Flemish brown. It has book-cases built in and an open fireplace. The dining-room is also trimmed with cypress and stained antique oak. It is furnished with a china closet and fireplace. The butler's pantry is fitted up with sink, dressers, cupboards, etc. The kitchen is well provided with closet, store closet, dresser, sink, and a range in fireplace. The rear hall contains a bicycle room and a stairway to cellar and to second story.

The second story is trimmed with white pine and is treated with white enamel paint. This floor contains a large open hall, sitting-room, four bedrooms, large closets, linen closet, and two bathrooms. The sitting-room is provided with an open fireplace, with seats on either side of the same. All the bedrooms have open fireplaces, except one, built of brick, with the facings and a hearth of the same, and neat Colonial mantels. The bathrooms have wainscoting and a floor paved with tiles, and are furnished with porcelain fixtures and exposed nickelplated plumbing.

There are two guest rooms, two servants' rooms, trunk room, and one bathroom on the third floor. The cellar contains a laundry, cold storage room, furnace room, and coal and wood bins. Mr. Robert S. Stephenson, architect, 1133 Broadway, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

OLD-TIME GARDENS.

Two fine examples of old-time garden walks are reproduced on page 53. The walk with the straight trellis is on the estate of Horatio Grinnell, Esq., at New Bedford, Mass., and was laid out in the early part of the nineteenth century, while the one with the curved cover is on the estate of Mrs. Edward C. Jones, of the same place, and was laid out in 1830 and 1835.

The utmost simplicity of materials entered into the making of these walks, but their old-time form and the rich foliage, trees, vines, and shrubs with which they are surrounded and embedded give them a charm that many a more ambitious but later work of the similar sort does not possess.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

THE PARLOR MATCH IN NEW YORK.

PARLOR matches have been classed with dangerous combustibles, the use of which is a violation of the law as set forth in the city charter. During the last year thirteen hundred fires were caused by the use of parlor matches, and Fire Commissioner Sturges will issue no more permits for the sale or manufacture of parlor matches. Hereafter the old-fashion sulphur matches or so-called "safety" matches are the only kinds that can be used. A rigid enforcement of the laws regarding the handling of combustibles will prevent the use of almost every kind of combustible material whatsoever. So-called "safety" matches, which are lighted by being struck on the side of the box, are nearly as dangerous as parlor matches, and can be readily lighted if struck on a window pane.

A plea has been made in Paris for the old-time sign board, hung out into the street by the shop keeper, and an exhibition of such signs was recently held there and excited much interest. It is true that much picturesque beauty can be obtained in an artistic sign board, and it is equally true that the modern successors of these adjuncts to trade are frightful affairs of no beauty at all. Yet the tendency in many American cities has been to dispense with them altogether, and to keep our streets clear of as many obstructions as possible. As a whole the modern method appears to be an improvement over the old custom, notwithstanding the superior art qualities of the old style.



RIGID REVERSIBLE METAL LATHS.

Metal laths are equally adapted to exterior and interior construction, and when used instead of wooden laths, shingles, and weatherboard siding, they are satisfactory in every way. In raising the standard of modern building, the long and extensively used metal lath is prominent for contributing its time and wear resisting qualities, and many more positive advantages over other means of construction, because of its suitability both for inside plaster and for outside cement operations. The employment of the metal lath forms a perfect safeguard against dampness and fire. Vermin can not breed in a room whose walls are provided with metal laths because their rigidity prevents cracks in the plaster, in which insects can hide. Metal laths also muffle sound vibrations and add a degree of permanence and solidity to the builders' work that increases the facilities for outer architectural effects, and for interior decorations upon ceilings and walls. All buildings planned for stability, from the average residence to the finest mansion, from a store to an emporium, from a town hall to a great capitol, will best secure protection against the changes of temperature and humidity by the use of metal laths. This is particularly important in buildings such as the Library of Congress and the Boston Free Library, where no deterioration ever sets in owing to the rigidity secured by these laths.

An excellent lath for all purposes is the Cambridge rigid reversible metal lath, manufactured by the American Sheet Steel Company of New York. In the use of this material for building purposes there need be no fear of deterioration of the lath itself. Metal protected by plaster is proof against corrosion.

All wooden beams or supports can be insulated so as to be practically fireproof. We say practically because under extreme and extraordinary circumstances no edifice is absolutely fireproof, there being degrees of heat nothing can withstand; as obtained in the Boston conflagration, where buildings in front and at the sides of the fire began first to smoke from the heat radiating from the burning, and without waiting for the tongue of flame to touch them, would all at once burst into a blaze, and in this fire steel melted in innumerable cases and stones and bricks were burned to powder. Gas pipes, electric wires, and other necessary connections can be made through the walls without difficulty. The metal lath with plaster is also adapted to airshafts, dumb-waiter shafts, chimney stacks, alcoves, architraves, cisterns, and vaults.

Many of the most attractive residences throughout the United States have adopted the metal lath overlaid with cement for their external construction. A perfect finish, having the appearance and durability of stone, may be imparted to the cement; and the various colors of the cement, and the adaptability of the metal lath, render possible any architectural effect that may be desired. Houses so constructed are cooler in summer and more easily heated in cold weather. Aside from the monolithic character of the material, it is a well known fact that heat passes less rapidly through corrugated surfaces. No painting is needed, and the fireproof quality of such residences secures favorable insurance. The same method of construction is adapted to other buildings. The Pennsylvania R.R. station at New Brunswick, N. J., is covered with cement over metal laths, giving a uniform and pleasing effect. Churches, greenhouses, stables, and factories can adopt the same materials advantageously for external construction. They are also excellently adapted for the erection of stoops, archways, porticoes, vestibules, cornices, fountain basins, gate posts, fences, and similar outside features. The address of the American Sheet Steel Company is Battery Park Building, New York, N. Y. The works are at Pittsburgh, Pa., and to show their capacity we mention that one contract made at the end of December for the requirements of one firm for the year 1903 demands 80,000 tons of black sheets and 30,000 tons of other material. This large order is for the National Roofing and Corrugating Company, and the huge amount of material needed is to cost \$6,490,000.

METAL DECORATIONS.

THE Kinnear & Gager Company, of Columbus, Ohio, has moved its works and office from Fourth and Chestnut Streets to No. 326 Mount Vernon Avenue. The new plant covers a full square frontage on Mount Vernon Avenue, formerly erected and occupied by W. A. Gill. The company is now better equipped than ever, and it will continue the manufacture of stamped steel

ceilings, sidewalls, doors, and other interior decorations in metal. In designs, the ceilings, sidewalls, and wainscoting of this Columbus firm are delightfully artistic. They are provided with the interlocking slip joint and quadruple lock joint. A catalogue will be sent if applied for. The company has a branch storehouse at No. 125 Broad Street, Boston, Mass.

GREENHOUSES.

THE Lord & Burnham Company, of Irvington-on-Hudson, N. Y., and New York City, is making extensive additions to its plant at Irvington. These additional buildings will comprise a large wood-working mill equipped with the most modern machinery for the preparation of cypress wood capping, bars, etc., for its standard iron construction greenhouses, and for the manufacture of cypress greenhouse material for the trade for the "all sash bar" construction (the demand having outgrown the capacity of the present mill); a power-house on its new dock for the installation of new steam boilers and engine; also additions to its foundry and shops for making the well-known "Burnham" heating boilers.

The enlargements referred to, taken in connection with its present works, including the extensive iron-working shop built three years since, will nearly double this firm's present facilities, making it possible to not only fill all orders very promptly, but also to handle its rapidly growing business in the making of completed greenhouses and all kinds of greenhouse material. This firm of horticultural architects and builders, and steam and hot water heating engineers, has its New York city office in the St. James Building, Broadway and Twenty-sixth Street.

INTERLOCKING RUBBER TILING.

INTERLOCKING Rubber Tiling is manufactured solely by the New York Belting & Packing Co., Ltd., under patent. It has been on the market for the past eight years, and it is annually meeting with increased success.

Among the many advantages claimed for Interlocking Rubber Tiling we may mention a few prominent ones:

It is noiseless, non-slippery, waterproof, thoroughly sanitary, and so durable as to last practically a lifetime without requiring repairs, and that it may be laid directly upon the existing floor whether of wood, cement, stone, or iron, therefore saving the expense of constructing a concrete floor, which is absolutely necessary in other kinds of tiling. As the tiling does not require to be laid in cement, the work of laying may be accomplished during business hours without interruption. On the grounds of economy and usefulness the material is found to be especially desirable for banking-rooms, corridors of public buildings, steamships, yachts, railroads, hospitals, billiard-rooms, kitchens, pantries, bathrooms, vestibules, etc., and in regard to appearances it has the capability of being designed into harmonious color combinations in keeping with any surroundings. Beautiful effects both in tile and carpet designs may be secured. The Interlocking Rubber Tiling is now specified by leading architects, and may be seen in up-to-date buildings in all of the leading cities. One of the severest service tests given is in the Empire Building Arcade, running from Broadway to the Rector Street Elevated Station, New York. From forty to fifty thousand people pass through this Arcade every day, and the tiling is still in first-class condition. Another extraordinary test is in the Broad Street Station of the Pennsylvania Railroad at Philadelphia, where the tiling has been on for seven years and is still in excellent form.

It has been laid in many large business houses, exchanges, churches, hotels, and private residences throughout the country.

The United States Navy is also a large user of the tiling, and it is to be found in all the latest steamships, gunboats, and transports, where it is giving the highest satisfaction. The address of the company is No. 25 Park Place, New York, N. Y.

HARTMAN'S SLIDING BLINDS.

We announce to the former patrons and friends of the old firm of Hartman Sliding Blind Co. the retirement from active work of the senior member, Mr. J. B. Hartman. A new firm has been incorporated with F. S. Hartman president, and its factory was removed on February 1st from Crestline, Ohio, to Bowling Green, Ky., where new and commodious buildings have been erected. Modern in all respects, and equipped with the most complete line of machinery that can be secured for the purpose, the company will enjoy at this favorably located plant the capacity and the means to largely increase the output of such specialties as the popular Hartman patent inside sliding blinds, Venetian blinds, window and door screens, folding partitions, etc. All communications should now be addressed to the Hartman Sliding Blind Company, Bowling Green, Ky.



The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date of number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

METALLIC MATRIX FOR BUILDING BLOCKS. W. C. Lyon, Hyattsville, Md. January 6	718,009
MANUFACTURE OF TILES, BRICKS, PANELS, ETC. T. Pliser, Chicago, Ill. January 13	718,381
SLAB OR BLOCK FOR BUILDING PURPOSES. A. Mack, Cannstatt, Germany. January 27	719,123
ROOFING TILE. F. E. Coombs, Boston, Mass. January 27	719,193
MOSAIC TILE. T. H. Mooney, Dayton, Ohio. January 27	719,244
SLAB FOR BUILDING CONSTRUCTION. M. Watson, East Orange, N. J. January 27	719,396

CARPENTRY.

WEATHER STRIP. C. Voss, Brooklyn, N. Y. January 13	717,041
WINDOW. A. W. Cooper, Chicago, Ill. January 6	717,816
WINDOW. Voigtmann & Pomeroy, Chicago, Ill. Jan. 13	718,403
WINDOW. P. Beriges, Allegheny, Pa. January 27	718,596
WEATHER STRIP. E. Gauron, Haverhill, Mass. Jan. 27	718,926
WINDOW FRAME AND SASH. R. E. Browne, Brooklyn, N. Y. January 27	718,975
FLOOR CLAMP. W. Horstera, Harrison, S. D. January 27	719,335
WEATHER STRIP. W. Savitz, Sayre, Pa. January 27	719,377

CONSTRUCTION.

WALL TILE. R. C. Taft, Topeka, Kan. January 6	717,638
CHIMNEY. B. H. Miller, Mendota, Ill. January 6	717,696
ILLUMINATING STRUCTURE. F. L. O. Wadsworth, Williams Bay, Wis. January 6	717,782, 717,783, 717,784
ROOF STRUCTURE. H. A. Hittner, Pa. January 6	718,044
REFLECTIVE WALL OR CEILING. L. Bartelstone, New York, N. Y. January 13	718,302
CONSTRUCTION OF BUILDINGS. H. D. Conway, Jackson, Mich. January 13	718,429
METHOD OF MAKING SUBSTRUCTURES FOR BUILDINGS. J. M. Ewen, Chicago, Ill. January 13	718,441
METAL CLIP FOR USE IN STEEL BUILDING CONSTRUCTIONS. H. A. Strickley, Chicago, Ill. January 13	718,545
STAIR COVER AND NOSING. W. H. Cooper, New York, N. Y. January 20	718,821
CONSTRUCTION OF FLOORS AND CEILINGS FOR BUILDINGS. J. C. Peison, San Francisco, Cal. January 27	719,038
ILLUMINATING STRUCTURE. F. L. O. Wadsworth, Williams Bay, Wis. January 6	719,066
STRUCTURAL METAL SUPPORT. T. Collins, San Francisco, Cal. January 27	719,191
MATERIAL FOR THE CONSTRUCTION OF BUILDINGS. L. Millet, Hagerman, Idaho. January 27	719,243
FLOOR AND CEILING CONSTRUCTION. J. Schratwieser, Brooklyn, N. Y. January 27	719,378, 719,379, 719,380

ELEVATORS.

ELEVATOR. W. H. B. Teamer, Philadelphia, Pa. January 13	718,230
SAFETY APPLIANCE FOR ELEVATORS. J. B. Dondrey, New York, N. Y. January 13	718,328
ELEVATOR. G. W. Nistle, Chicago, Ill. January 13	718,374
ELEVATOR. N. Hiss, New York, N. Y. January 27	719,114

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIREPROOF FLOOR. H. Marling, Darien, Conn. January 13	718,267
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HINGE. A. E. Preston, Battle Creek, Mich. January 27	719,137
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HEATING AND VENTILATION.

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HEATER. C. G. Haudrich, Newhall, Pa. January 20	718,931
VENTILATING WINDOW FOR ROOFS. W. Dreyer, Wesseling, Germany. January 27	719,203

MISCELLANEOUS.

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ROOF BRACKET. J. L. Chase, Ayer, Mass. January 20	718,602
SCAFFOLD. W. L. Clark, New York, N. Y. January 27	719,188

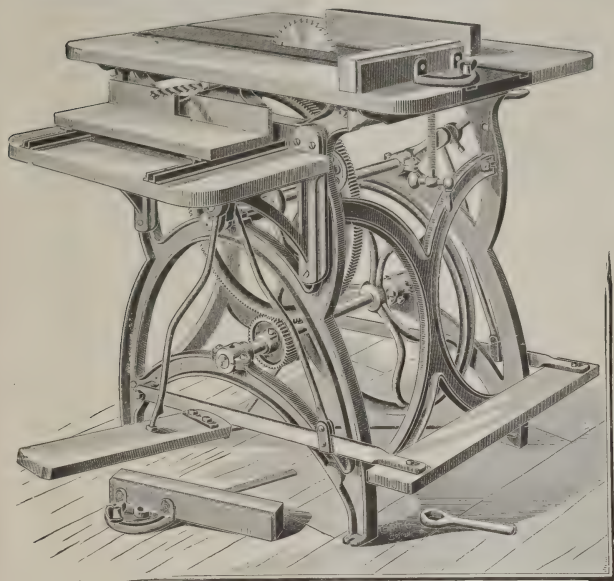
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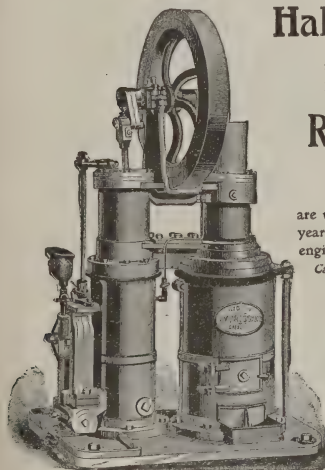
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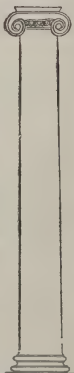
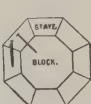
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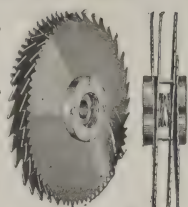
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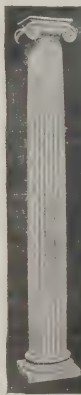
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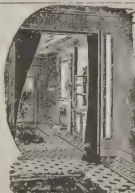
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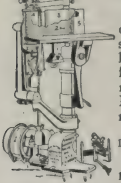
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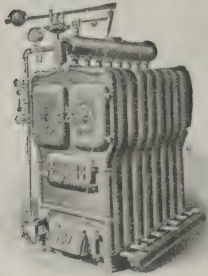
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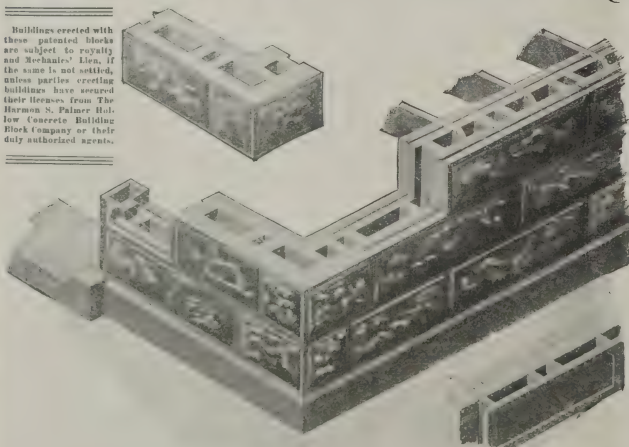
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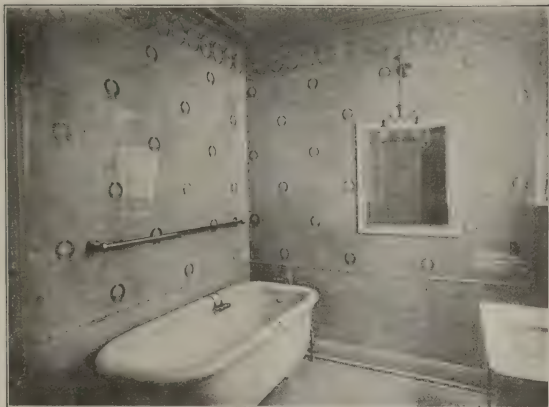
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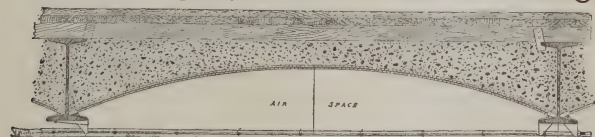
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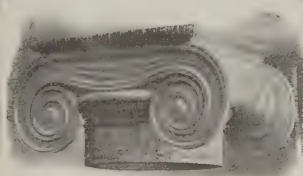
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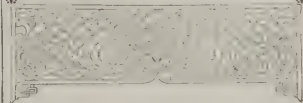
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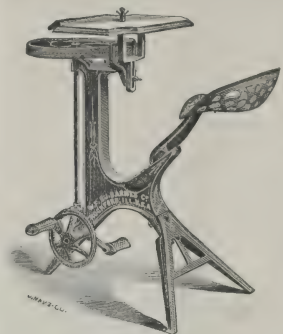
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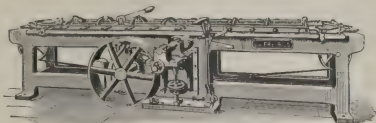
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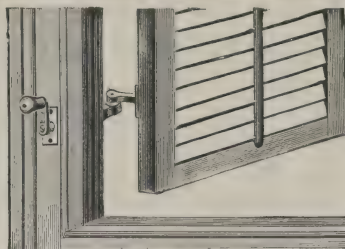
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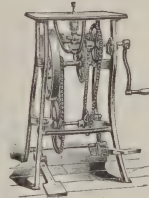
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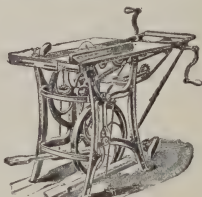
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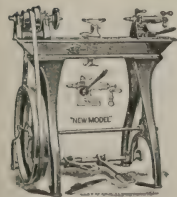
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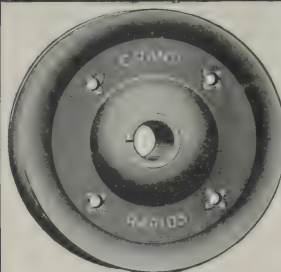
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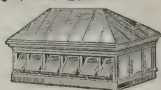
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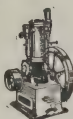
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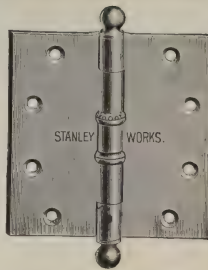
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PIAZZA—A RESIDENCE AT NEW HAVEN, CONN.—See page 84.
MR. RICHARD WILLIAMS, ARCHITECT.

SCIENTIFIC AMERICAN BUILDING MONTHLY

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MONTHLY COMMENT.

THE relations of the building trades to the labor market is one of the most unsettled and vexatious problems the builder is concerned with. More than one large investor has had his fill of difficulties with the unions and vowed that his last new building has been erected. The trouble is not with a union or the union, but in the multiplicity of unions. Rival unions are very much worse than a single strong union, because they introduce fresh complications at every turn and entail many unforeseen difficulties. Not only has each branch of the building trades its own union, but in many of them are varieties and rivalries producing complications of enormous difficulty and vexatious hardships. In their contests against capital it would be well for the building unions to bear in mind that new buildings are not a necessity to any large modern city;—not necessary, for example, like heat and light. Even New York could get along for a few years without a single new structure—and perhaps might be the better for a cessation of building activity. But new buildings are built because capitalists hope to realize a return on their investments. If to the original cost of the structure is to be added other costs from strikes and increased wages, and refusals to work with certain other organized sets of laborers, there will be no money forthcoming for further buildings. Capital is an exceedingly sensitive element, and if it can not find quick or positive returns in one venture it will seek another which promises more. Modern buildings are very costly structures, requiring large amounts of capital; if there are too many impediments to their erection there will soon be no funds available for their building. This is an aspect of the building problem that the labor unions, as a rule, do not appear to have fully considered.

ONE of the most important artistic events in this country recently happened in Boston in the opening of the Isabella H. Gardner Museum. This museum is not only unique among the museums of this country, but it is also one of the richest and most important. It is at once a private residence and a public museum, and it is, moreover, located in a palatial structure, said to be a genuine Italian palace brought almost literally stone by stone to America. Into the propriety of such an architectural procedure it is not necessary to inquire. It was a method of building that one choosing it doubtless could carry out if desired. But it means nothing to American architecture. The museum itself, however, is so surpassingly rich, so splendidly housed, and so remarkable in its arrangement and contents as to be well above criticism. It differs from all other museums in America in being arranged as a residence and as a palace. Treasures of art which were created for palatial surroundings here have exactly the environment for which they were designed and intended. It is a remarkable experiment in museum arrangement and an enormously successful one.

A MUSEUM, however, does not depend on its arrangement and its housing for its value. These elements count, and count very much; but the merit of a museum is measured by its contents, and in this respect the Gardner Museum easily leads the other museums of America. For many years Mrs. Gardner has been known as a wise collector of art objects, but until her museum was thrown open it was not known how universally admirably she had purchased, nor how universally high was the standard of her acquisitions. The government of the United States is not partial to the acquirement of costly works of art by private collectors, and it is well known that many men of wealth do not bring to their American homes treasures of art purchased abroad because of the heavy tax levied in the interest of home industries(!). Mrs. Gardner was not only extremely fortunate in gathering together some of the greatest works of art recently acquired by private individuals, but she very cleverly hit on the expedient of turning her house into a museum, and importing her treasures for this specially created public institution. She has, therefore, accomplished the double purpose of adding to her own happiness by surrounding herself with her treasures and of giving the people of Boston an art gift of almost priceless value. Incidentally she has shown how great works of art may be disposed in a private dwelling.

THE architectural revolution goes slowly on. Better houses are being built—the architects are better equipped to design them; cities are being adorned, and much interest is being manifested in the general subject of artistic architecture. All of these are matters of value, all help toward general improvement, and yet positive results seem far removed from present activities.

GARDEN TIME.

THE garden is the setting of the house. It is not only a place for joy and pleasure, but to the true lover of the beautiful it has a purpose distinctly useful in being at once the introduction to the house and its chief ornament. A garden implies personality; personality implies a dwelling place, and there can be no garden that does not bear a more or less distinct relationship to the house.

A garden's first purpose is to be beautiful. It would be hard were it otherwise, for plants, trees, shrubs, and flowers are nature's fairest products, and these are the materials of which the garden is constructed. But the art of garden making—and it is both an art and a science—does not lie in bringing as many plants, or as many different plants, into a given space as can be crowded together there. Good gardening, fine gardening, does not consist in promiscuous crowding or in injudicious effort. A garden is a work of art, and like every true work of art, it is the resultant of thought, of effort, of care, of consideration.

That it is often a difficult thing to make plants grow is at the foundation of garden craft. For garden making is concerned with getting the right plants to grow in the right way and in the places where they will tell the most and help the most in producing a final effect. A garden, a true garden, is not getting things to grow in rows and rows, in heaps and thickets, a wild profusion and a thoughtless disregard of resource. It is a carefully studied affair, in which each tree, each plant, each color of the flower has a definite place and relationship to a whole, to the garden complete as it is pictured in the mind of the designer.

This is quite as true for small gardens without pretense as for stately affairs set off with architectural adornment and beautified with sculpture. The wise garden maker will, indeed, contend that the small garden needs more thought than the large one, because the utmost must be done in it with the slightest space and with the smallest material. It is a most mistaken

notion to assume that because one's space is restricted, one's means narrow, one's possibilities slight, that one might not, with due care and frugal expenditure, have a garden that in effect may be utterly satisfactory, a joy alike to the owner and to the chance beholder.

The garden maker has two points of view from which to attack his delightful problem. These are himself and the public. Fortunately it is very generally the case that what is satisfactory to the owner is also effective to the public; yet the latter can not be ignored; and, since no possible point can be overlooked in garden making, the larger external aspect of the garden must also be considered with the personal aspect.

The garden picture is one of the first essentials in garden making. The garden expert will describe the way in which various plants grow, and can estimate the effect of a given mass of foliage or of bloom. In small gardens this may not always be done, and not every devotee of flowers may be able to form a vision of the final garden when planting seeds or arranging small plants. Yet without this prophetic insight, without this future mental guide, it will be impossible to get the best results, and much valuable labor will be lost because the best fruits will not be realized.

The garden maker, however, has at least the satisfaction of realizing that, even though the result aimed at be not achieved, a certain quantum of beauty may be had if one's plants but grow. Growth, of course, is a matter of science. Some flowers will grow in almost any soil, and not a few will survive positive neglect. But the labor spent on gardens is almost invariably recompensed in the glory of the result; and it may be quite positively affirmed that the more labor put into garden making, the more abundant the result and the more satisfying. It is the old secret of success in art, for nothing is accomplished without effort.

Gardens only differ from each other in size. There are great gardens and small gardens, and all the gardens that ever were made fall into one or the other of these two great classes. True, there are many varieties of gardens, but even these fall into the classification just given. And the reason of this fundamental distinction is apparent when it is recalled that the larger gardens are almost invariably the most ornate. One does not build pergolas in a back yard; one does not erect a Greek portico in a front area; one does not place statuary or great vases or balustrades or monumental steps in narrow quarters. All these adjuncts belong to gardening on a great scale, and thus the classification is maintained, and all gardens are recognized as great or small.

It is important that this distinction should be well understood; for it is a fatal error to reproduce in a small garden the style, the effects, and the forms of the large garden. The garden space is generally fixed in area, and when limited it is so obviously limited that any attempt to outgrow it can only result in dismal failure. One should make the most of a small garden—it is always legitimate to do that—but a small garden should not ape a large one, nor should it attempt to be something which it not only can not be, but which it is not.

The secret of much success in garden making lies in adherence to this rule: Do the most you can, but do not try to do too much. A garden aims at beauty, and the more beautiful it is the more conspicuous its success. But it must be in keeping with itself. The plants and flowers must be such as will grow and thrive within the limits available for them. If space can not be spared for trees, then trees must be omitted from the scheme. If there is no room for high foliage plants, they also must be dispensed with, although of great beauty and effectiveness when their beauty and effectiveness can be appreciated. Plant life is so rich, floriculture is so overwhelming in its resources, that one never lacks beautiful things to grow, and, if one studies the problem sufficiently attentively one will never fail in beautiful results.

Over and above the garden is the house. They are all but inseparable, and the relationship of the garden to the house is so intimate that it may be the redeeming element of the two. It is fortunately true that an ugly house may have a beautiful garden, although they can never agree, nor can they be the unity which results from surrounding a beautiful house with a beautiful garden. But a garden may go a long way in relieving the sordid aspects of a house, and may transform an ungainly place into a bower of beauty.

The garden has, therefore, a purpose, real and useful, positive and advantageous, in aiding architecture and in helping building exactly as it helps one through the sheer force of its inherent beauty. It is the transformer of land; it is the beautifier of dull places; it is a daily object lesson in beauty; it is the soul of nature, trained by man for his own delectation and the adornment of the earth. It is the universal cure-all for dull houses, for sordid places, for unsightliness, untidiness, neglect, and decay. It inspires, ennobles, purifies. It is more penetrating than art, for it is nature's own adornment. The beautiful season has come again; garden time is at hand!

TALKS WITH ARCHITECTS

MR. HENRY HORNOSTEL ON BRIDGES.

A TALK with an architect on bridges, an architect, moreover, directly concerned with the design of some of the most important bridges now under construction in this country, has an element of novelty in it. For the all but universal practise in bridge design in America has been for the engineer to appear as the sole designer, and to conceive and erect his structure with no other assistance other than that of the trained engineers in his own office. The cooperation of a trained architect in bridge design is, therefore, something quite new under the American sun; but New York has reason to feel itself especially fortunate in the cooperation of so able a man as Mr. Hornbostel in the final designs for the two great bridges across the East River which are now in process of construction. These bridges will be known as the Manhattan Bridge,

He readily yielded to my request for some direct information for the BUILDING MONTHLY, and we were soon plunged into an animated discussion of the artistic element in bridge design.

"My connection with the bridge problem in New York," said Mr. Hornbostel in beginning, "is a rather long story. Bridge Commissioner Lindenthal asked for my cooperation. Mayor Low requested the Commissioner to submit new designs for the bridge, and my relationship to the matter subsequently assumed definite form. A portion of my work in this connection was shown in the drawings recently exhibited at the annual exhibition of the Architectural League."

"And wonderful drawings they were," I broke in. "Splendidly executed, they gave a fine sense of the size of the bridges, and were, in fact, masterpieces of draftsmanship such as has seldom been shown in American drawings. I felt, as I looked at them, that the Beaux-Arts was not without fruitful results, al-

as my observation goes engineers have been the sole designers of bridges, and they have expected people to admire them not because they were beautiful—for they seldom had the grace to go so far as that—but because they were structural and economical; because they could, in fact, have been built in no other way."

"As to that," was the reply, "it is only necessary to refer to the practice of French engineers, several of the Paris bridges, which are rightly ranked as among the most beautiful in the world, having been built with exactly the same cooperation as was done in the new New York bridges. But the results obtained in our new bridges show that the old contention that a bridge must be economical and ugly to have engineering merit has been quite done away with. The architect was not called upon to design the bridges—their general form and character had already been determined upon—but he was called upon to modify their lines—the silhouette, to speak technically—and



THE HALL.—RESIDENCE OF CHARLES T. WILKINS, ESQ., SPRINGFIELD, MASS.—See page 84.

a suspension bridge which will be erected between the present Brooklyn Bridge and the new Williamsburgh Bridge, now nearly finished; and the Blackwell's Island Bridge, which will touch Manhattan at Fifty-ninth Street.

Mr. Hornbostel possesses unusual qualifications for cooperation in bridge design. A graduate in architecture of Columbia University, his first professional studies were in engineering, in which he has always maintained a lively interest. He spent some time in Paris at the Ecole des Beaux-Arts, and is a prize man of that famous school of architecture. He led the American competitors in the great international competition instituted for the University of California at Berkeley, Cal., being second prize winner, the first prize in which was carried off by a French architect. He was one of the preeminent architects in the competition for the New York Public Library, and, in addition to having been the architect of a number of important buildings, has displayed a fine mastery of the art of design, a richness of architectural resource, and an administrative ability of a high order which have marked him out as one of the most able of the younger architects now practising in New York.

though perhaps that is not what you most value the training acquired there at."

"The original idea," he continued, "was to modify the designs prepared for the two bridges—Manhattan and Blackwell's Island—projected by the previous city administration. The former was to be a suspension bridge, the latter a cantilever structure. My task was the comparatively simple one—one easy to state, at least—of making these designs beautiful. The engineers then took my modified designs and worked them out structurally, and it is an interesting fact that, when the results were compared with the previous designs, the modified designs were found to be more economical than the original proposals."

"All of my own work, however, was done in constant and close association with Mr. Lindenthal, the Bridge Commissioner, and Mr. La Chicotte, the engineer in charge. The designs as finally submitted to the Art Commission, and approved by it, were the work of these two men and myself. They were joint designs in which each man had his own share, and in which the final result would have been impossible without just that cooperation we maintained."

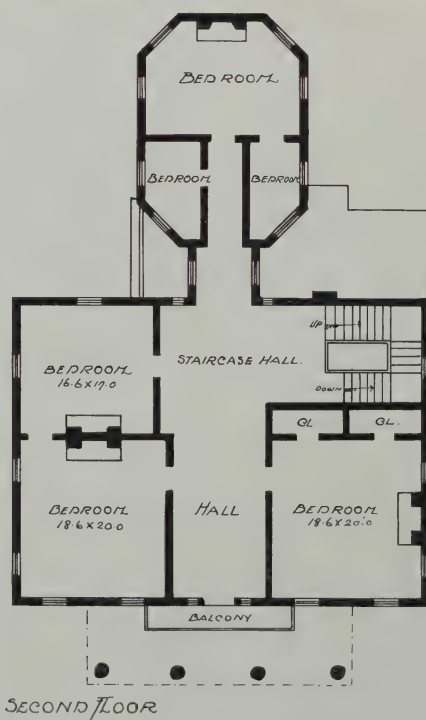
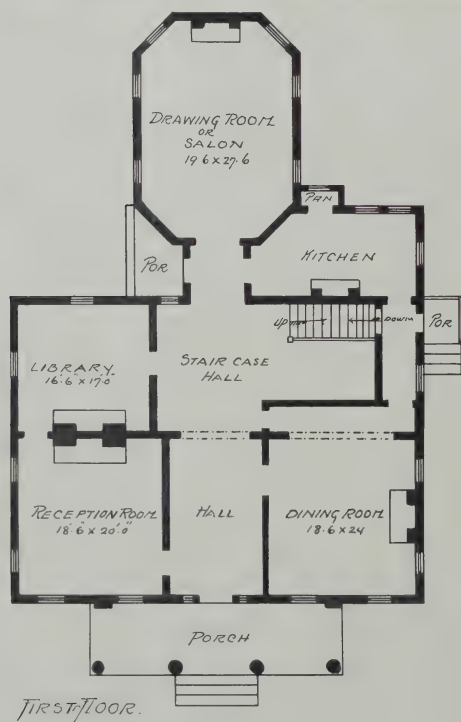
"But is not that something new?" I asked. "So far

these lines being improved as best they could, the engineer again came into use with the results I have already noted."

"The modifications proposed were considerable, and yet the fundamental lines were not seriously altered. Where a pier had already been begun or completed it was left as it existed and then taken as the basis of the new proposals. Cable and cantilever lines were made more direct, definite, and expressive; roadbeds and cross sections were treated with the object of obtaining the best results—results at once desirable artistically and from the standpoint of the engineer; masonry details were improved; greater care given to the finish of the ornamental metal work. In a word, grace was to be given wherever possible. Lines of construction were not to be sacrificed, but were to be bettered. I am quite content to rest on a comparison of the original designs with the final ones."

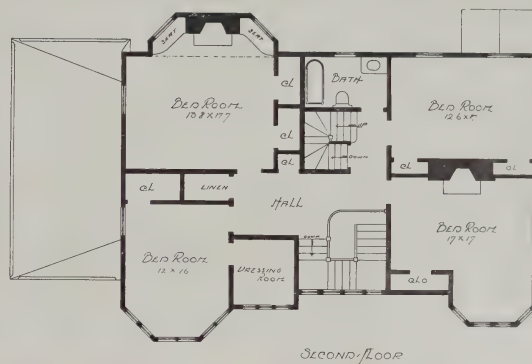
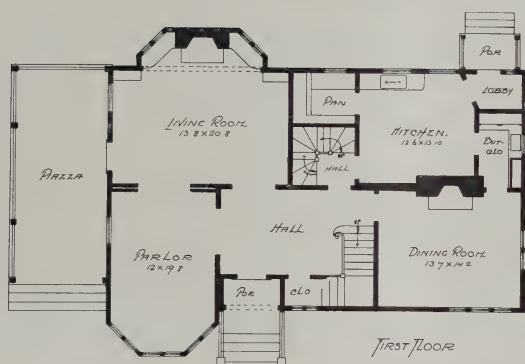
"It would take me too far into technical details to explain in full the reasons which lay behind the changes suggested. In the cantilever bridge across Blackwell's Island the lines were made more definite and directly expressive of the cantilever construction,

(Continued on page 82.)



WASHINGTON'S HEADQUARTERS IN NEW YORK, 1776.—See page 82.

THE ROGER MORRIS MANSION.



A RESIDENCE AT CHESTNUT HILL, MASS.—See page 87.
MR. H. S. FRAZER, ARCHITECT.





A RESIDENCE AT SPRINGFIELD, MASS.—See page 84.

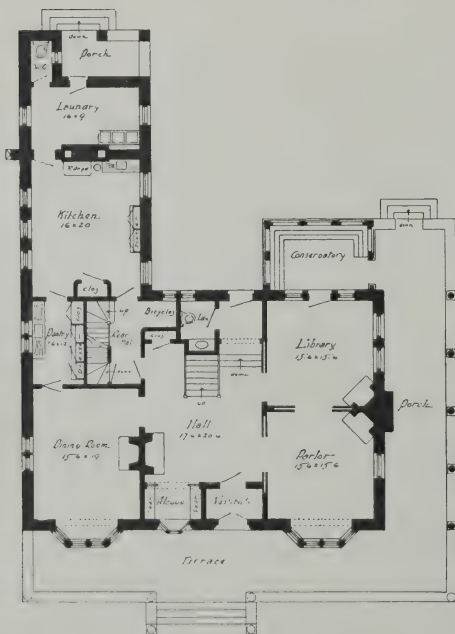
MR. G. WOOD TAYLOR, ARCHITECT.



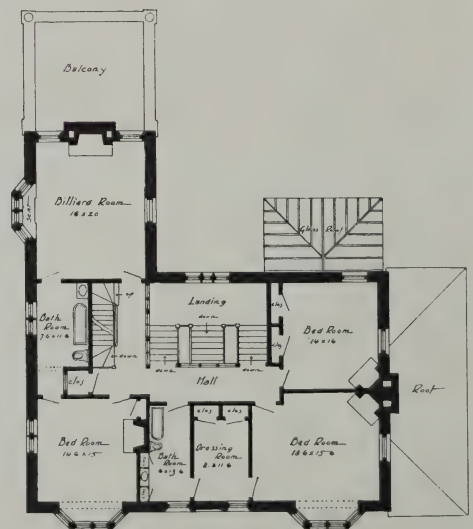


A COUNTRY HOUSE AT RINGWOOD, N. J.—See page 87.

MR. BRUCE PRICE, ARCHITECT.



• FIRST FLOOR PLAN •



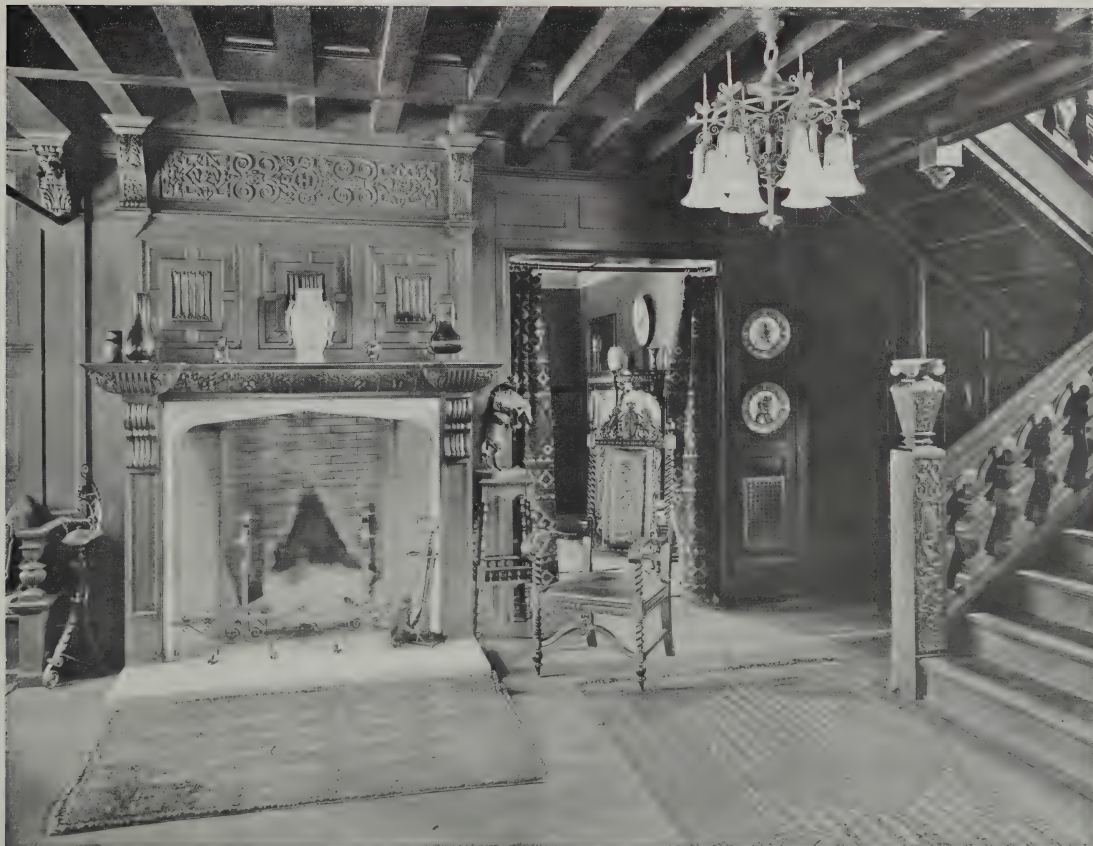
• SECOND FLOOR PLAN •

A RESIDENCE AT PELHAM, GERMANTOWN, PA.—See page 86.

MESSRS DAVID K. BOYD AND LAWRENCE V. BOYD, ARCHITECTS.



THE RECEPTION-ROOM.



THE HALL.

A RESIDENCE AT PELHAM, GERMANTOWN, PA.—See page 86.

MESSRS. DAVID K. BOYD AND LAWRENCE V. BOYD, ARCHITECTS.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

A RESIDENCE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 85.

MR. JOHN J. PETIT, ARCHITECT.

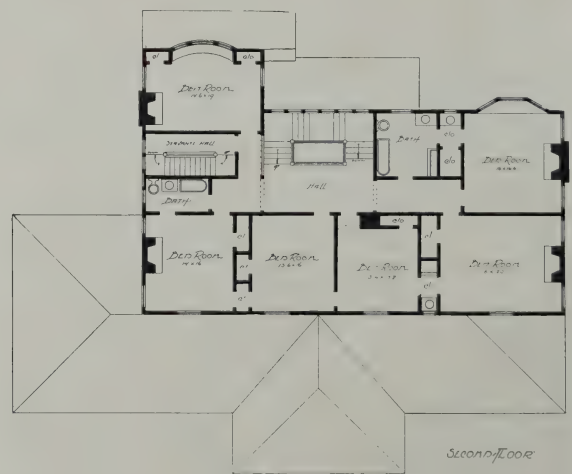
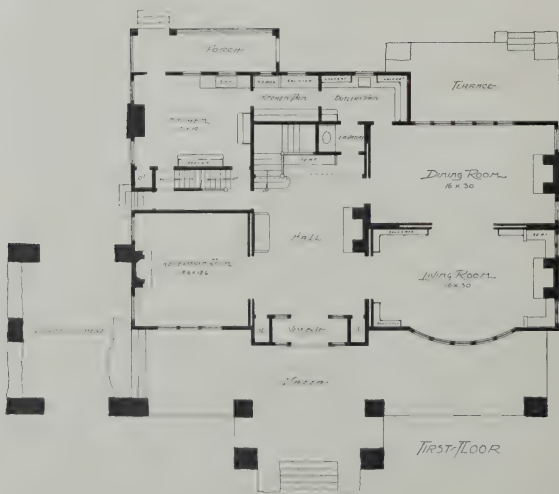


RESIDENCE OF C. OLIVER ISELIN, ESQ., PREMIUM POINT, NEW ROCHELLE, N. Y.



RESIDENCE OF E. C. BENEDICT, ESQ., INDIAN NECK, GREENWICH, CONN.

COURTYARD GARDENS.—See page 86.



A RESIDENCE AT NEW HAVEN, CONN.—See page 84.

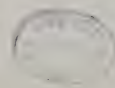
MR. RICHARD WILLIAMS, ARCHITECT.



DINING ROOM.

A RESIDENCE AT NEW HAVEN, CONN.—See page 84.

MR. RICHARD WILLIAMS, ARCHITECT.





RESIDENCE OF WILLIAM BARR, ESQ., SOUTH ORANGE, N. J.
MR. ROBERT R. STEPHENSON, ARCHITECT.



"GREYSHINGLES," RESIDENCE OF S. RAYMOND ROBERTS, ESQ., GLEN RIDGE, N. J.
MESSRS. HORACE B. MANN AND PERRY R. MACNEILLE, ARCHITECTS.

TWO DOORWAYS.—See page 86.



THE HALL AND DINING-ROOM.
A RESIDENCE AT KIRKWOOD, GA.—See page 85.
MESSRS. BLECKLEY & TYLER, ARCHITECTS.

MR. HENRY HORNBOSTEL ON BRIDGES.

(Continued from page 69.)

with the result that the design now clearly expresses exactly how the bridge is built, and exactly why the various curves and trusses are used.

"In the Manhattan Bridge the Commissioner introduced a type not heretofore employed in this country. The cables are fastened to pivotable columns, instead of being carried over them on saddles—a system that gives more stability and greater economy in erection. The stiffening truss is raised from the roadbed to the suspension cables, which are intended to be links of nickel steel instead of wire ropes, and the roadbed is left entirely free and unobstructed, while material is saved by using the suspension member as the upper member of the stiffening truss.

"A special feature of this bridge has been the placing of an assembly hall in each of the great piers in Brooklyn and Manhattan. The cables descend into their tying piers just across a street which is arched, and the construction is such that space has been found for a great hall, 120 feet by 78 feet and 30 feet high, immediately above the street. This hall is capable of seating 2,000 persons, and is provided with cloak and retiring rooms, and may be entered immediately from trolleys on the bridge roadbed or by elevators from the street below. It will form a fine place of public assembly, and will give a public hall in each of the principal boroughs of New York at very small expense.

"As an illustration of the detailed study that has been required for the bridges I may mention that even the question of lighting has been considered. The Williamsburgh Bridge, which is now near completion,

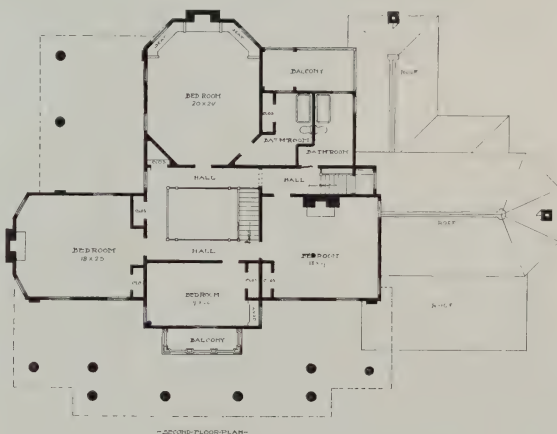
dition till the Revolutionary War, when the necessities of the army of occupation led to clearing it for fuel for the soldiers. The first property purchased in Harlem Plains was secured by Jan Kiercen in 1675, and in order to obtain a title for land from the common woods, on which to have a house, barn, and garden, negotiations had to be made with every inhabitant for his signature to the instrument. Kiercen received a deed for his property on March 7, 1700, and he built and occupied the first house in Harlem. The property was sold afterward to James Carroll, and later became the property of Col. Roger Morris. The new purchaser was the younger son of Owen Morris, of Wandsworth, England, who had come to America as an aide on the staff of Gen. Braddock in the French War. He went on Gen. Braddock's expedition to Fort Du Quesne, and was wounded. After his recovery he became the hero of a romance which imaginative writers have invented and embellished with a vast amount of fiction, and have made him a successful rival of Washington, who was also in Gen. Braddock's expedition.

In 1756 the Governor of Virginia appointed Washington in command of the military forces of the Colony, and a British captain in the regular service refusing to recognize his authority, he was deputed to go to Boston, and lay the matter before the Commander-in-Chief, Gen. Shirley, who had his headquarters in that town. On his way to Boston he was entertained by Col. Beverly Robinson, of Virginia, who was now living in the Highlands. Col. Robinson had recently married Susan Philipse, the eldest daughter of Frederick Philipse, the former owner of the Manor of Philipsburg, an estate comprising most of the lands in West-

of the building. A stately portico with four slender Doric columns, and a gallery at the second story carried on cantilevers, form the principal characteristic of the exterior of the house. It points to the southward, and the portico and balcony, already mentioned, overlook the Harlem River and Long Island Sound, and likewise command a view of the Harlem Plains. As a point of observation it is hardly to be excelled, and for the facilities it afforded it was selected during the War of the Revolution by both the American and British commanders.

Through a broad doorway, with windows on either side and a transom overhead, one enters the hall, twelve feet wide, and extending through the building. The original staircase, with its broad, sweeping treads, graceful rises, and square landings, extends to the second and third stories.

The reception-room, 18 ft. 6 in. by 20 ft., on the left side of the entrance, still retains its low wainscoting, and the old open fireplace with mantel-tree piece about 12 ft. wide, which was imported from England. The room at the rear of this reception-room also retains its old fireplace and mantel, and the original wall decoration. The dining-room, 18 ft. 6 in. by 24 ft., at the right of the entrance, has been somewhat modernized. The drawing-room is, perhaps, one of the handsomest rooms of any of the houses of the Georgian period. It was constructed with an octagonal form, and was afterward used as Mme. Jumel's salon. There is also a one-story kitchen on the first floor in the rear, 22 by 12 ft., of modern construction; the original kitchen being in the cellar. The second story ceiling is 9 ft., and it contains a hall 12 ft. wide and six bedrooms.



PLANS OF MR. JOHN B. GORDON'S HOUSE, KIRKWOOD, GA.—See page 85.

will be lighted by an external row of incandescent lights placed outside the stiffening truss. For the Manhattan Bridge a novelty has been proposed in concentrating the lights on the tops of the towers, and reflecting them downward on the suspension girders. It may be an experiment, perhaps, but one well worth the making."

And then the talk turned to more general subjects; but when I left Mr. Hornbostel it was with a renewed sense of the ability of the man, and a realization that for the special problem of bridge design in New York the right man had been found, who had attacked his problem in the right way.

BARR FERREE.

WASHINGTON'S HEADQUARTERS IN NEW YORK, 1776
THE ROGER MORRIS MANSION.

BY FRANCIS DURANDO NICHOLS.

The illustration shown on the cover, and also on page 70, presents the Roger Morris Mansion, better known, perhaps, as the Jumel Mansion, and historically known as General Washington's headquarters in New York in 1776.

The illustrating of this old house is of peculiar interest at the present time for the reason that it presents not only a style of architecture of the Georgian period, a style which originated in the Italian Renaissance, was later transplanted to England, and afterward brought to this country in the early part of the eighteenth century, but more particularly on account of the present movement to purchase the site and mansion for a public park. The property in question is all that remains of an estate memorable from its association with public men and important events in the earlier years of the American Republic.

When Manhattan Island was first colonized it was covered by a dense forest, and continued in this con-

chester County and a part of Putnam and Dutchess Counties, but at that time, however, the estate had been broken up by legal process, and the lands were divided among the heirs-at-law. Present at the house of Col. Robinson was Mary Philipse, a sister of his wife, who was celebrated for her beauty, and to whom Washington paid his addresses during a visit of several days, and again on his return from Boston. He was rejected, however, for Roger Morris, his former comrade in arms, had already secured her hand.

The site of the Morris House, which is a commanding one, being the highest point on Manhattan Island, had arrested the attention of Col. Morris on his frequent rides on horseback into the country with Mary Philipse. Immediately after his betrothal he purchased several hundred acres of land, and erected upon its highest and most picturesque elevation what is now popularly known as the Jumel Mansion. It was in 1757 that this imposing dwelling house was rising and taking shape, and being erected in the latter period of the Colonial time, it still remains a conspicuous monument of the taste and ambitious aspirations of those who lived during the infancy of the Commonwealth. It might be called to mind that New York City up to 1770 was only one half of a mile in length, and about the same distance in width, and that Broadway was only paved as far as St. Paul's Chapel. The houses at this time were a mixture of English and Dutch architecture. Its inhabitants existed in a very primitive manner and everybody lived in a very simple style. One writer has humorously described it as a "city without a bathroom or a furnace."

The house as built, rests upon a cellar dug out of solid rock. The main part of the great building is nearly square in form, being 52 ft. 8 in. in width and 38 ft. 6 in. in depth, and two stories and attic in height. The walls were constructed of imported Holland brick sheathed with plank and with quoins at the corners

Col. Morris and Mary Philipse were married in March, 1758, and in the following summer Col. Morris took his bride to the new home he had completed on what is now called Washington Heights. After his marriage he again entered the service and was with Gen. Wolfe at Quebec. He was breveted Lieut.-Colonel and left the army in 1764 to make his home in New York, where he became a member of the King's Council.

Mrs. Morris presided with great dignity over the household on Harlem Heights, and it was the social center in its day, of the fashion, the rank, the beauty, and scholarship, and the courtliness of the Capitol often assembled under its roof, and among whom were the Livingstons, Van Courtlandts, Bayards, De Lanceys, De Peysters, Earl of Dunmore, Sir William Tryon, Gen. Moniton, Sir Henry Moore, Benjamin Franklin, and many others of equal distinction, and both the host and hostess were cordial, graceful, and sincere in their hospitality. Col. Morris and his wife occupied this house until the commencement of the War of the Revolution in 1776, when their social reign came to an end, and being loyalists they were forced to abandon it, at which time General Washington and his staff took up quarters in the Morris Mansion.

In July, 1776, the British under Lord Howe had taken possession of Staten Island. On the 22d of August they were landed on Long Island, and on the 27th the battle of Long Island was fought under Gen. Putnam with disastrous defeat for the American forces. Hostile operations were kept up three days longer, when Gen. Washington brought the remainder of the troops to New York.

On September the 14th, Gen. Howe, with his company, moved up to the city. The British immediately passed a line across Manhattan Island from Kipp's Bay to Bloomingdale, at a point now Ninety-fourth Street. It was at this point that one of the historical events occurred when Nathan Hale, the heroic sol-

dier, consented to imperil his life by serving as a spy, and was captured and executed, his only regret being that he had only one life to give for his country.

Col. Thomas Knowlton, who had named Hale as the best man for the dangerous service, bravely gave up his own life one week before the death of the illustrious martyr. Col. Knowlton was ordered to go before the day of the 16th of September, and under the protection of the dense forest, and when it was yet dark, he came unexpectedly upon the British forces and an engagement took place. He was driven back to the point of rocks at the junction of Haarlem and King's Bridge Roads, and Washington learning of this hastened to the scene of the conflict and ordered a flank movement. Both parties were reinforced, but the Americans won the victory on the site of what is now occupied by Columbia College; the British loss being seventy killed and two hundred wounded, while the American losses were twenty-five killed and fifty-five wounded.

It was a memorable battle, indeed, for the Americans had defeated the bravest troops in the British army, men who had won laurels under Gen. Wolfe at Quebec.

Gen. Washington, having won the battle of Haarlem, returned to the Morris House, and was busily engaged in preparing his dispatches to Congress when Col. Knowlton and Major Leitch were brought in from the battlefield fatally wounded. Col. Knowlton fell at a spot near Trinity Cemetery. He was a good soldier and had fought before under Prescott at Bunker Hill. It was at this time that Alexander Hamilton attracted the attention of the Commander-in-Chief by the skill with which he had constructed some earthworks. They constituted the fortification which commanded a view of the site where he afterward built his mansion and where he also planted the thirteen trees in commemoration of the Thirteen States of the new Union.

One day when Aaron Burr, who was now holding the position of Aide, was writing from dictation by Washington, they were surprised by the visit of a deputation of Indians, who came into the room with grave silence, and after arranging themselves, a sign was given by the leading man, who was spokesman for the party, and who said: "Hero of the Great Company who fight for Liberty and Country, We, the braves of the Council of the Six Nations, come to do you honor, and to gladden our eyes with a sight of the Greatest Warrior of the Pale Faces." The whole group then cast at the feet of the General branches of laurel, hemlock, and pine, which they were holding, and saluted him respectfully, after which act of homage they went silently out.

The two armies had now been remaining several weeks in their intrenchments, when Gen. Howe and his company started up the East River en route for Throgg's Neck. Washington, learning of this move of Gen. Howe, withdrew his army from Manhattan Island, and left the Morris House on October 21 and went to White Plains. The Americans were defeated there, and retired to North Castle. Gen. Howe proceeded to Dobbs Ferry, and then to Fort Washington. The fort was invested on November 15, and attacked on the following day. The garrison had been left there at the instance of Gen. Greene, and might have maintained a more successful resistance had not treason led to its surrender.

On the 17th of November, Washington, with Gens. Greene, Putnam, and Mercer, crossed the river from Fort Lee to the Morris House, and viewed the position of the Americans, and the movements of the enemy. While engaged in doing so, he saw the Forty-second Highlanders, under Col. Sir Thomas Stirling, coming across the Haarlem River with a force of Hessians, and move direct to the Morris House. Fifteen minutes after the Americans had left, Washington pushing off from shore, saw the house in full possession of the British troops. The Morris house was now the headquarters of Gen. Knyphausen, and it continued so till the evacuation of New York in 1783.

The Morrisises were included in the bill of attainder in 1779, and after peace was declared, their house and landed property were confiscated and sold, by order of the Commissioner of Forfeiture. The title passed through several hands, finally being vested in the name of Dr. Isaac Ledyard.

In 1785 it became a public tavern, and Talmage Hall, the proprietor of a line of stages from New York to Boston, made it the first stopping place after leaving New York.

Gen. Washington paid it a visit on July 10, 1790, accompanied by a party consisting of the Vice-President, his lady, and Miss Smith, the Secretaries of the States, Treasury, and War, and the ladies of the two latter, and the gentlemen of his family. They visited the old position of Fort Washington, and afterward partook of a dinner prepared by Mr. Mariner, at the house lately occupied by Col. and Mrs. Morris. Its former glory had departed, however, for at this time the original owners were refugees in England, and their mansion, once the flower of Colonial society, and visited by Governors and men of distinction from abroad, had now become a common household.

Col. Morris and his wife went to England with the British troops after the evacuation of New York, and the government made him compensation for his losses. He died in 1794, and afterward a claim was made on behalf of Mrs. Morris for a restitution of the property, basing her claim on a prenuptial agreement. The question of the validity of the Act of Attainder, as affecting the rights of her children, came thus into court for adjudication, and rather than to await a long drawn out suit Mrs. Morris accepted an offer of \$100,000 from John Jacob Astor, and thereby ended all further litigation. She died July 18, 1875.

In 1810 it became the property of Stephen Jumel, a French merchant of the city, and occupied by himself and wife during the latter part of his life.

In 1814 the Khedive of Egypt presented Napoleon with four hundred African cypress trees. After the ascension of Louis XVIII. they were left to perish from neglect, and M. Jumel, hearing of this, petitioned for them, and was permitted to bring them to this country. He planted them around a circular fish pond, which he had built near the mansion, and twenty of them are still living on the east side of the building. Each summer they put on their dark dress, as if to remind beholders of their superior rank as being of ancient descent, and belonging to the same family as the gopher or cedar of Scripture.

Mme. Jumel, being one of the 'queens of the salon,' held court in the large drawing-room at the rear of the mansion, and among the many prominent persons who enjoyed her hospitality were Marquis de Lafayette, Duke de Chartres, afterward King Louis Philippe, Talleyrand, Prince Louis Napoleon, Prince de Joinville, Joseph Bonaparte, ex-King of Spain and oldest brother of Napoleon the First, and many others of equal importance.

Upon one occasion when Mme. Jumel was giving a dinner for Joseph Bonaparte, he offered her his arm in escorting her from the reception-room into the banquet-hall, where they were obliged to enter through a narrow door. The guest, with a profound bow, stepped aside for Mme. Jumel to precede him, while Mme. Jumel was doing the same, and requesting her royal friend to take precedence; how the incident was settled remains to be told, but we do know that the following day Mme. Jumel ordered another door cut into the banquet-hall, large enough to admit two persons.

M. Jumel was an enthusiastic admirer of Napoleon, and upon the wane of the Emperor he arranged his affairs and sailed with Mme. Jumel in his own vessel, the "Eliza," which he had named after his wife, and sought to give Napoleon an asylum in America. Napoleon being sensible of the futility of the project, gracefully declined, representing that it was not consistent with his dignity. The Jumels had now set up an establishment in Paris, and they enjoyed the social patronage of the elite of the French capital, and many tales are told of their triumphs at the French Court.

Their brilliant career came abruptly to an end, for the wars of Europe and America had brought financial ruin, and reduced their fortune considerably. Mme. Jumel returned to her home on Haarlem Heights in 1821 and M. Jumel in 1828. In May, 1832, he was thrown from his carriage and died shortly afterward. In the summer of 1832, Mme. Jumel drove in a chariot drawn by eight horses, from her home to Saratoga, and on the day following bought a house with its furnishings complete. In 1852 Mme. Jumel again went to Paris, where a ball was given which she attended with Joseph Bonaparte. Again returning to her home on Haarlem Heights, she late in life married Aaron Burr, and lived there until her death in 1865.

The property went into litigation, between the American and French claimants, and on November 14, 1882, was sold by order of the Supreme Court, partition sale by Philo S. Ruggles as referee, and after passing through several hands, was bought by the late Gen. Ferdinand P. Earle in 1900.

In accordance with a resolution adopted on February 28, 1902, a hearing was given on the recommendation of the Local Board to purchase Washington's headquarters and grounds on behalf of the city.

Mr. H. K. Bush Brown, a sculptor, and member of the Architectural League and other art societies, and Mr. Louis H. Cornish, editor of "The Spirit of '76," spoke in favor of purchasing the property. Mr. Cornish submitted communications from the following persons, all favoring the purchase: President Roosevelt, Gen. H. C. King, Gen. Thomas Wilson, Hon. Chauncey M. Depew, Edward P. Cone, Esq., and many others of equal importance. The American Scenic Historic and Preservation Society, of which Mr. Edward Hagaman Hall is Secretary, and the Sons of the American Revolution are deeply interested in this movement.

The plot of ground upon which the mansion stands covers an area amounting to 67,391 square feet, or about 27 city lots of 25 by 100 feet. The estimated value of the property is \$157,125.

The exterior of the house is in good preservation, though at the present time the interior wall decora-

tion and furnishings have lost all of their former splendor, and it is to be hoped, should the city purchase the property for a public park, that a committee be appointed from the various patriotic societies with a view to restoring it as far as possible to the original house.

New York, the metropolis of the nation, where was held the first Congress of the American Colonies upon the promulgation of the Stamp Act, where was made the Declaration of the Bill of Rights, where was shed much of the blood of the Revolutionary War, first capital of our Federal Union with Washington as the first President, owes it to herself to act patriotically in this matter, and preserve for all time Washington's headquarters, one of the three landmarks still remaining, and which was so sacredly associated with that one wise and heroic leader above all others, who wrought out for us the heritage we now enjoy.

A TRIBUTE TO WALTER COPE.

THE late Walter Cope, of the celebrated firm of Cope & Stewardson, of Philadelphia, was not only one of the leaders of architecture in his own city, but one of the foremost architects of this country—foremost not alone in the work he did, but in the high quality of his design, the breadth of view of his art, and the elevating beauty of his buildings. A resolution by the Philadelphia Chapter of the American Institute of Architects well sums up the thoughts of his immediate contemporaries and associates.

Resolved, That in the overwhelming sadness which the death of our friend and associate, Walter Cope, has cast about us we still rejoice in the beauty of his life and his labors, which leave behind them so precious a memory and so stimulating an example. Deeply skilled in his art, there was brought to him from far and near problems of ever increasing difficulty and importance. He bore joyously the burden of these many tasks and stood before us steadfast in the discharge of duty, untiring in the pursuit of excellence and beauty, firm in upholding a noble standard of conduct. And yet it is not his work as an architect, distinguished as it is by volume and quality, that leaves with his companions the deepest impression of him, but rather his constant sincerity, his limpid truthfulness, his spontaneity and frankness, his joy in art, his splendid scorn of wrong.

Resolved, That in the death of Walter Cope the architects of America have lost one of the ablest of their number, and that we, his immediate associates, mourn him not alone as a fellow artist, but as a friend tried in many ways, and true in all.

ROOFING RECOMMENDATIONS.

A TRADE circular offers some recommendations on roofing which deserve wide circulation.

It is just as important to have a first-class, substantial roof on a building as it is to have a solid foundation.

The first cost is the prime factor. It costs no more to put on good tin plate than it does a cheap article. Use nothing but the very best brands of roofing plates.

As a protection to the tin and a preventive of noise, put good roofing felt or paper under the tin.

Use only the finest solder. It takes less material, less time, holds faster, makes the strongest job, and is the cheapest in the end.

Have the seams well soaked with fine solder, and allow no acid in soldering, but use resin only.

Have each sheet well cleated to the roof, with not less than four cleats to a sheet 20 by 28 inches.

Paint all tin underneath, and as soon as the roof is on thoroughly apply one good coat of paint. In a month or two afterward give it another good coat, which will last for several years.

It is a great mistake and injurious to any metal roof to allow the coating to be scratched off and the tin rusted before painting. You paint wood to preserve it, therefore paint the roof when finished.

Select a first-class roofer, one who you know will do good work and is responsible.

If possible, prevent walking over a tin roof with shoes with nails in, as they dent and scratch the metal. Do not allow boards filled with nails, plaster, or bricks and mortar to be dragged over or thrown on the roof after the tin is laid.

If the above instructions are carefully followed and the best brands of tin are used and put on properly by approved methods, you have a tin roof that will last for fifty years.

HOUSE DESIGN.

THE most serious question in designing a house that we have to meet with is, what shall the concrete thing be made of and how shall it be made? Or, perhaps, how shall it be made and what shall it be made of? The material must be moderately cheap. The buildings must not or should not require any great amount of ornament. Texture should be the first consideration.

—W. L. Price, architect.

The Household

ROOM CLEANING.

THE Cornell Reading Course for Farmers' Wives prints some useful hints on room cleaning. If a carpet is on the floor, it says, brush along the edges with a whisk, out about a foot, and then use a sweeper. If a broom is preferred, wring out of water single sheets of newspapers, pick them up and scatter over the carpet. Sweep with a short stroke, which keeps the dust down near the floor where the paper will catch it, or if a hard wood floor is to be cleaned, a cotton flannel bag tied over the broom will gather up loose dirt. The advantage of a hard floor is that a room can be cleaned without the usual preparation, for rugs being carried outside and cleaned; nothing is left to scatter dust on the floor.

While the dust is settling, do necessary washing—as mirrors, windows, window sills, both outside and in. Brush walls with a broom covered with a bag, or a convenient substitute. Dust the furniture exposed to the dust of sweeping.

Remove sheets, gathering them up so as to hold the dust, shake out and fold away. Return the furniture carried out and arrange draperies and windows.

SUMMER AND WINTER HOUSES.

I HAVE never yet, writes a correspondent to a contemporary, found two houses exactly alike in their requirements, and I doubt very much if any one else ever did. Some windows are suitable for one arrangement of curtains, while another shaped casement cries out for an entirely different treatment; while again, until one has really lived in a room one can not find out its virtues or its vices, and find out, too, how best to enjoy the first and eliminate the latter with a most unsparing hand. Only in one house have I ever been baffled and put to flight. Artistically, it was charming to look at; but try as I would, I could never live happily in it, and glad was I to leave it and settle down in a much less artistic abode, but in one so comfortable that not one day passes that I do not bless my stars for having landed me in it.

Then, again, city houses, suburban houses, country houses, all require separate legislation. One has to consider future as well as present wants; and yet once more there are people, especially just now, who are either on the move altogether, or are contemplating the renovations the spring makes necessary. And does any sunshine anywhere show up the depredations of the winter as does the spring sunshine? I am sure that no other does; and I personally am going for the future to imitate a dear old friend of mine, dead these twenty years, who roused my girlish scorn then, but who has now my slavish admiration, and am going to have winter and summer curtains everywhere, and am even going in some cases, and everywhere I can afford it, to put down summer rugs, and, indeed, to bring spring and summer into the house, as well as welcome them outside in the garden.

MODEL HOUSEKEEPING.

AN exhibition of model housekeeping is being shown in connection with several of the larger schools of domestic economics. Its aim is to show how science can be applied to daily living so as to obtain the greatest economy in time, labor, and expense in housekeeping. Particular attention has been bestowed on the subject of shelter. "The great moral question of the home," the projectors of the exhibition assert, "can not be separated from the proper housing of the family." Illustrating this principle are shown methods of window ventilation, a baseboard for a kitchen, the possibilities of a run-down farm and of a very old country house adapted by a college professor, suggestions for a house to cost \$3,000, plans of college dormitories, suburban residences, and the home of a professor of home economics in Leland Stanford, Jr., University. The protection of the person is shown in the application of home economics and theories to clothing. Samples of fabrics for outer garments, underwear, and bed covering are shown. It is pointed out that the ventilation of the body demands as much thought as the ventilation of the home.

Home economics as applied to food are represented by a copious bibliography. A collection of pamphlets issued by the Department of Agriculture on foodstuffs is a prominent feature, while among other exhibits are a number of specimen bills-of-fare, showing ten, fifteen, and twenty-cent menus. That part of the exhibit also includes a dietary computer and outfit, and has for its aim the combination of food materials in right proportions.

A RESIDENCE AT SPRINGFIELD, MASS.

THE residence which is illustrated on pages 69 and 72 has been erected for Charles T. Wilkins, Esq., at Springfield, Mass. The underpinning is built of red brick laid in red mortar. The superstructure is of wood and the exterior framework is covered with matched sheathing, good building paper, and shingles, and the whole is stained a dark, soft brown color, while the trimmings are painted a cream white. The roof is covered with shingles and is stained in a similar manner. Dimensions: Front, 44 ft.; side, 43 ft. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall is trimmed with white pine and the whole is treated with white enamel. It has a paneled wainscoting and a beamed ceiling. The staircase is an ornamental one with fluted newel posts and balusters painted white, while the rail is of mahogany. The screen between this hall and the reception-room has a paneled base, pilaster effect and ornamental spindle-work. The reception-room is treated with white enamel. The living-room is trimmed with cherry and has a bay window with a paneled seat and an open fireplace built of brick, with the facings and a hearth of red enameled tile. There is also a wooden cornice. The dining-room is an attractive apartment with a paneled wainscoting, beamed ceiling, and a paneled seat in the bay window. China closets, with leaded glass doors, are built in either corner of the room. The kitchen china closets and the rear hall are trimmed with hard pine finished natural. Each part is furnished and fitted with the best modern conveniences. The rear hall and the stairway is a convenience.

The second floor is trimmed with white pine, treated with white enamel paint. It contains a spacious hall and four bedrooms and a bathroom; the latter is wainscoted and paved with white enameled tile and is furnished with porcelain fixtures and exposed nickel-plated plumbing.

The third floor contains three bedrooms and a bathroom, besides a trunk room. The cellar contains a furnace, laundry, fuel bins, etc. Mr. G. Wood Taylor, architect, 425 Main Street, Springfield, Mass.

A RESIDENCE AT NEW HAVEN, CONN.

ON pages 67, 78, and 79 will be found illustrations of a residence erected for Abner Hendee, Esq., at New Haven, Conn. The architecture is of a rural character.

The building has an underpinning built of moss covered field stone laid up at random. The balustrade and columns to piazza are constructed of similar stone. The superstructure is of wood and the exterior framework is covered with matched sheathings and then shingles stained a rich brown color. The trimmings are painted a bottle green. The roof is covered with shingles and is stained with a moss green effect. The total length of the house, including the carriage porch, is 90 ft. and the depth 72 ft. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. At the front there is a piazza 14 ft. wide with a pavilion in the center opposite the entrance. The floor of the piazza is of cement.

The front entrance leads through a large tiled vestibule to the reception-hall, which is 18 ft. by 22 ft. 7 in. The principal features of this room are the large fireplace, staircase, several paneled seats, the high wainscoting, and the quaint beamed ceiling. The trim of the reception-hall and staircase is of quartered oak. On the right of the entrance are the living and dining rooms, with a large opening connecting them. The living-room is trimmed with quartered oak and it has a paneled wainscoting, bookcases built in, and an open fireplace, with cozy paneled seats built in on either side. The dining-room is trimmed with maple and is stained an old mahogany color, and it has a paneled wainscoting, beamed and paneled ceiling, and an open fireplace furnished with tiled facings and a hearth and a mantel of Colonial style with columns supporting a massive wooden shelf. The reception-room is finished with white enamel, and it has an open fireplace furnished with a white tiled hearth and facings and a mantel. Directly back of this room is the rear hall and stairway opening from the main hall, and connecting with this is the kitchen, pantry, and butler's pantry, all fitted up with all the best modern conveniences. The butler's pantry is trimmed with oak and the kitchen with North Carolina pine.

The entire second story is trimmed with quartered oak, and it contains six bedrooms, two bathrooms, and large halls. Four of the bedrooms have open fireplaces. The bathrooms are paved and wainscoted with white enamel tile, and are furnished with porcelain fixtures and exposed nickel-plated plumbing. The third floor contains two bedrooms and a billiard-room trimmed with quartered oak, ample cedar and linen closets, and two rooms and a bathroom finished off for servants. The cemented cellar contains a laundry, furnace-room, fuel rooms, and cold storage. Mr. Richard Williams, architect, 82 Church Street, New Haven, Conn.

The Garden

ROSE BORDERS.

IN making new borders of roses for the decoration of the mansion and grounds, says a practical gardener, writing to a contemporary, the staple soil should be taken out to the depth of eighteen inches, putting on the bottom a layer four inches thick of good clay, unless there is a clay subsoil; then fill in with new soil composed of six parts of fresh loam, dug from an old pasture, and two parts of good rotten dung. These should be well mixed, and then filled in to the depth of fourteen inches. After planting at distances from eighteen inches to two feet apart, according to the habits of different varieties, mulch the surface of the border with some good rotten dung, which will serve as a protection to the roots of the roses and as a nutrient. Upon receiving the plants from the nursery, on no account allow them to be exposed to winds before planting. Everything should be made ready for planting before they arrive, that they may be put into the ground directly.

There are so many very fine varieties in teas, hybrid teas, and hybrid perpetuals, to meet the tastes of all lovers of this beautiful flower, that I strongly advise planters of any or all sections to arrange the varieties in groups, say at least a dozen in each color, so as they do not clash one with the other. In selecting, be sure to get those varieties most reliable for continuous blooming, and varieties that travel best as cut flowers.

SUMMER WINDOW GARDENS.

EVERY Paris house of importance has its balconies, great, small, and abundant. Other residences have their windows finished with little grilles suggesting balconies. And in all these little balconies and window railings gardens are cultivated through the spring and summer time that are charming and picturesque additions to the houses, to the streets, and the general effect of the city.

One carries away from Paris memories of these bright spots of color and of verdure that meet the eye everywhere, even in the poorer quarters, and then as one travels through this city and views the lace and satin-draped windows of our houses, so alike in their effect, he feels the chill of New York atmosphere that strangers sometimes find so unpleasant and that has won for New York the title of the loneliest city in the world.

In spite of the life and the bustle and the rush of New York our dwelling exteriors give little hint of esthetic beauty. The great apartment houses and hotels have the chill formality of institutions in their lines, while the familiar stoop houses marshaled in rows need no comment on their aggressive ugliness.

Window boxes, said a florist to a reporter for a daily paper, are not as difficult to manage as palms, but they require considerable attention. To allow them to wither or to lose their beauty is a mistake, for in place of being beautiful a neglected window garden is depressing. They must be well watered, weeded constantly, dry leaves cut off and the blooming plants kept in good condition. Every one who is accustomed to deal with flowers knows that they have their own peculiarities, their stubbornness, their tendency to sudden bloom and their eccentricities. It is a fact that flowers will thrive under the care and attention of some people, while others will have no luck with flowers, as they express it, although they may be unremitting in their attention to the wants of the plants.

The best way to keep window boxes in good order during a season is to have a florist prepare them and then look after them constantly, replacing flowers that may not prosper and giving those little attentions to the soil and to the roots that only a florist understands.

PLANTS FOR CITY GARDENS.

ON the side of the fence which gets the most of the sun during the day climbing roses may be planted, choosing the "garden Jacks," perpetuals, and "teas." These will give a glory of bloom through June, and always a rose throughout the summer. In the corner where the sun seems never to shine make a bed of ferns, getting for them sufficient rich, moist earth to give them a good start. Pansies thrive under the same conditions, and with proper care will flower most of the summer, though their perfection is reached early in the season. Mignonette, begonias, petunias, and geraniums are all hardy plants that make a good fight against adverse conditions.



THE HANDICRAFT MOVEMENT.

The handicraft movement, remarks an English contemporary, has been favorable to individuality. Sometimes it has savored a little of advertisement—the odder the design the more it is looked at; but the personality of the artist is seen, by which is meant a style not extravagant or eccentric, but one which shows personal handling; that a human agent has been employed in the production. In the new art there is odd, strange, fancy, giving a kind of originality which is more novelty than the expression of human thought. In the new craftwork, on the contrary, there is a reversion to early types, because they give more freedom to the designer. New art has no sympathy with material; it cuts wood across the grain, twists it into scrolls and shapes which are not natural for wood; makes it imitate gold. The new handicraft respects material and its properties and limitations.

Again, as to construction, the new art makes everything subserve the whim and caprice of the designer; the most impossible constructive feature, like a window or doorway, is introduced into the architectural design, with curves and capricious contortions that would have to be purposely constructed; it ignores entirely construction or architectural honesty, as we may see in many of the designs in the style. The new craftwork keeps closely to simple construction, and tries to express directly the actual construction. Nature is ignored by the designs of the new French school; it takes forms from the Rococo and other whimsical styles, and delights to follow the suggestions of the most aimless fancy—the more erratic the better, as in the curves. The craftwork ideal is to follow nature, to observe the laws of growth in curves, to study the mechanical laws in its designs.

Lastly, the new art is ambitious, and delights in luxurious work, while the crafts prefer the simple and homely. We must look to the new craft development, in which handicraft is the chief factor, for a reform in our methods and design. The principles underlying the new craft are honest and right. The traditional modern system of design, largely depending on machine-labor, will last long, in spite of its defects; it is popular to possess houses and furniture in the style of Louis XV, or Louis Seize, or the Empire. But the principles of the new craftsmanship will come, if the disciples of the cult do not degenerate, and introduce individual eccentricities.

In the design of country houses and cottages the style of the new craft is well adapted, as it favors the simplest plan and elevation, without any pretense to mere style; it affects the plain sash or casement window, the plainest form of high roof, without bargeboards or costly copings; the eaves are visible; the guttering and rain-water pipes are just where they are wanted to convey the rain-water off in the most direct manner; the chimneys are plain, and made features in the grouping. Internally the woodwork and fittings exhibit the same regard for truthfulness in construction that we have noticed in respect of furniture; material is treated honestly. Every fitting and stair-rail is made to be as useful and convenient as possible. A plain moulding is all that is seen, or a band of ornament of the simplest kind. The craftsman has learned what the modern designer in the styles has not yet learned, the beauty of simplicity; he knows how little of decoration is necessary, and if he can express to the eye any constructive principle or suggestion he prefers it to any superadded decoration. Thus also he prefers the simplest way of treating a post, say, a newel to a stairs; he chamfers the edges or cuts notches in a manner suggested by his tool, or cuts it into the shape of a gentle curve. The turned baluster is often painful to him in its multiplicity of members, the result of machine labor. The "planting" or sticking on of mouldings, so favorite a device of the mechanical designer because it is cheap and looks ornamental, is also baneful. Very simple decoration is chosen: the zigzag, wave line, leaf forms, and the most sparing any device is used the better. Complicated forms often show a desire to hide rather than express, and redundant ornament, like verbosity and redundancy of figure, betokens clumsiness and vulgarity instead of clearness and epigrammatic skill.

When the workman was his own designer we find these principles understood and carried out; but when the two functions became separated, and the designer became irresponsible and ignorant of workmanship, we find them misapplied. The designer likes to show his own skill in drawing, and he makes his ornament complicated and profuse; it hides a good deal, and, like everything diffusive, it misses the real point.

A RESIDENCE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

The residence which is illustrated on page 76 has been erected for Leo Franken, Esq., at Prospect Park South, Brooklyn, N. Y.

The design is of modern style with Italian feeling. The underpinning is built of red brick laid in red mortar. The superstructure, of wood, is covered on the exterior with rabbeted seven-eighth inch by eight inch clapboards, and the whole is painted white. The roof is covered with shingles and is stained a Venetian red. Dimensions: Front: 37 ft. 6 in.; side, 45 ft., exclusive of piazza. Height of Ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall is trimmed with oak and it has a paneled wainscoting and an ornamental staircase, starting from a broad landing, and rising to another broad landing, which is provided with a paneled seat and a cluster of stained glass windows. The parlor is treated in the Empire style, with a massive mahogany mantel and tiled facings; the remainder of the trim of this room is also of mahogany. The library is trimmed with oak and has a bookcase built in, over which there are a cluster of stained glass windows, and an open fireplace furnished with a tiled hearth and facings and a mantel of oak. The dining-room is treated in a handsome manner. It is trimmed with oak and it has a paneled wainscoting, a beamed ceiling, and an open fireplace with tiled facings and hearth, and a combination mantel and china cabinet with leaded glass doors. The butler's pantry is fitted with a bowl, drawers, dressers, cupboards, etc. The kitchen is furnished with range, sink, store closet, pot closet, and a lobby large enough to admit ice-box.

The second floor throughout is trimmed with white pine and is treated with white enamel paint. There are four bedrooms with large closets and lavatories, linen closet, and a bathroom; the latter is wainscoted and paved with tile of white enamel and is furnished with porcelain fixtures and exposed nickelplated plumbing. The third floor contains two servant rooms, trunk room, and a billiard-room trimmed with oak. A cellar under the entire house is cemented and it contains furnace, laundry, fuel bins, etc. Parquet floors in first story and oak floors in second story. The house was built by Dean Alvord, of 257 Broadway, New York, and was designed by Mr. John J. Petit, architect, 11 East Thirty-third Street, New York.

A RESIDENCE AT KIRKWOOD, GA.

The illustrations on pages 81 and 82 present a residence erected for Senator John B. Gordon at Kirkwood, Ga.

The building is designed in the old Classic style of the Georgian period. It has an underpinning built of red brick laid in red mortar. The superstructure is of wood and the exterior framework is covered with clapboards and is painted white. The fluted columns with Ionic capitals are the principal characteristics of the building. The roof is covered with metal. Dimensions: Front, 96 ft.; side, 52 ft. 6 in., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 11 ft.; second, 10 ft.

The interior is trimmed throughout with Georgia pine. The broad central hall is perhaps the most attractive room in the house. It is treated with white enamel, and it has a chair rail extending around the room. Four fluted columns with Ionic capitals form a unique combination with the staircase, which rises to a landing which is carried across the entire end of the hall, under which an entrance into the dining-room is obtained. The opening for the broad doorway rises above the floor of the landing and forms a balcony with artistic effect. The parlor is provided with an open fireplace with tiled facings and hearth and a mantel of Colonial style. The library is furnished with bookcases built in and an open fireplace fitted with tiled facings and hearth and a mantel. A bedroom with private bath is conveniently located and is fitted complete. The dining-room is finished in cherry. It has a paneled wainscoting, beamed ceiling, china closets with leaded glass doors, and a fireplace with a tiled hearth and facings and a mantel shelf. The pantry, of unusually large dimensions, is provided with sink, dressers, cupboards, and storeroom. According to the usual custom of a Southern house, the kitchen is separated from the main house by a porch, which is enclosed with latticed work.

The second floor contains four bedrooms and two bathrooms, the latter being furnished with porcelain fixtures and exposed nickelplated plumbing. The bedroom over the dining-room has an open fireplace with seats on either side. The cellar contains a furnace, fuel rooms, etc. The house is heated by a furnace and is lighted by gas. Cost \$10,000 complete. Messrs. Bleckley & Tyler, architects, English American Building, Atlanta, Ga.

Definiteness of purpose is one of the most valuable attributes in successful house building. First know what you want, and then try to realize the idea.



VENTILATION FOR CONSUMPTIVES.

A RECENT writer protests against the use of mechanical ventilation for consumptives, sometimes used in German and American sanatoria. This he regards as a mistake, as one of the objects of the treatment is the hardening of the patients, and for this there can be nothing better than open windows. Casements opening in have been found the best form of windows. Sashes only allow of half the window space being used for ventilation, and casements opening out are most troublesome and noisy in windy weather. The upper parts of the windows should be hopper hung or on centers, and it is a good plan to have lift butt hinges to the casements so that they may be taken out in hot weather. Open fireplaces, except for appearance in sitting-rooms, are not advisable on account of the dust, and low-pressure steam is generally admitted to be the best form of heating. Hot water would be preferable were it not that in sanatoria the temperature of rooms may fall below freezing, and there is a danger of burst pipes; and as the radiators are chiefly used for a short time while patients are dressing, hot water will not heat them rapidly enough. The radiators should be fixed at some little distance from the wall to allow of dusting behind, and should be of such a pattern that a brush can be used between tubes.

VENTILATION WITHOUT SPECIAL OPENINGS.

SOME recent English experiments show that in small rooms, provided there is an open chimney, no gas burning, and an air-space of not less than 1,000 cubic feet per person, the ventilation may often be fairly sufficient without open windows or other special means of ventilation. With a good coal fire burning in the grate the ventilation is likely to be fair, even with only 400 cubic feet of air-space per person. The larger the size of the room, however, the greater becomes the need of special openings for ventilation; and in rooms of over 5,000 cubic feet open windows or special ventilators are nearly always necessary unless the air-space per person is very large or the roof is very permeable to air. In large and crowded rooms it is very difficult to provide adequate ventilation at all times except by the use of fans; but observations show that excellent results can be attained without mechanical ventilation even in a very large room if there is no crowding and the manufacture is not affected by external variations of atmosphere.

VENTILATION BY FANS.

VENTILATION by fans, says an English government report, has the great advantages that (1) practically unlimited quantities of air can be supplied; (2) the supply is completely under control, so that it can always be relied on; (3) the incoming air can be warmed, moistened, or filtered from soot; (4) dust and fumes can be removed at or near the points where they are given off. These advantages are so great, as compared with the cost involved, that where engine power or electricity is available mechanical ventilation is now very largely used in factory ventilation, even in rooms which are not crowded.

A fan may be placed in either an inlet or an outlet for air, the best arrangement for any particular case depending on circumstances. If it is necessary to warm, filter, or moisten the incoming air, the fan should, as a rule, be in an inlet, so that no untreated air can enter the room. If the incoming air has not to be treated the most convenient position is usually in an outlet placed high up. The incoming air then enters through the walls, roof, and various openings. The incoming air-currents should be so directed and subdivided as to secure proper distribution of air and reduce draught to a minimum. In rooms of great superficial area several fans are needed to secure proper distribution; and often a combination of inlet and outlet fans is advantageous. Where a fan is used for the removal of dust, steam, or fumes which are escaping into the air, and can not be dealt with at their point of origin, the fan should be placed so as to draw off the vitiated air as directly as possible, and particularly not to draw it across the room. Mistakes as to this point are not infrequent. Proper heating arrangements must of course be combined with fan ventilation, whether or not the incoming air is heated.

FILTERED AIR—air cleaned and purified before it is brought indoors—is purer and better than the freshest of "fresh" air taken in by the open window.

Legal Notes

ABANDONMENT OF CONTRACT.

AN owner, completing a house after the contractor had abandoned his contract, did not, by making changes in the plans, such as people in good faith not infrequently make during the process of construction, make a different house from that contemplated in the original contract, so as to waive his rights under the original contract. *Delray Lumber Co. et al. vs. Keohane et al.*, 92 N. W. Rep. (Mich.) 489.

ARCHITECT'S CERTIFICATE.

NOTWITHSTANDING that a building contract required the architect's certificate as a condition precedent to payments thereunder, the architect's certificate was not necessary to the maintenance of an action thereon, it appearing that the owner had declared the contract forfeited and taken possession of the building for the purpose of completing the same. *Ocorr & Rugg Co. vs. City of Little Falls et al.*, 79 N. Y. Supp. 251.

CARPENTER'S NEGLIGENCE—PERSONAL INJURIES.

A CARPENTER employed to construct a shed for storage of cement had had no experience in such work and did not know what would be required of the structure. Defendant furnished the material, and its foreman selected the site, on the side of an embankment, and planned and directed all the work. Before the shed was completed, and while plaintiff was at work on the roof, the foreman directed sacks of cement to be piled in the shed. While this was being done, the shed fell and injured the carpenter. Held, that it was for the jury to determine whether the structure gave way because it had been imprudently located, negligently planned, constructed of insufficient material, or recklessly overloaded, or whether the defects resulted from the carpenter's negligence. *D. Sinclair Co. vs. Waddill*, 65 N. E. Rep. (Ill.) 437.

FAILURE TO COMPLETE.

IN an action on a building contract, providing that the building should be completed by a certain time, the fact that it was not so completed was no defense when it appeared that the delay was caused by the owner's fault. *Ocorr & Rugg Co. vs. City of Little Falls et al.*, 79 N. Y. Supp. 251.

INDEPENDENT CONTRACTOR—OWNER'S LIABILITY.

WHERE a stairway in a public building was in process of reconstruction by a stair builder under a contract made with the agent of the owner, under which the contractor was given full control of the stairway for that purpose, and the cleats nailed on to the stairs, which caused plaintiff to fall, were placed there by the contractor's servants, over whom neither the owner nor his agent had any control, and the work was not completed nor turned over to the owner until a month after the accident, the negligence, if any, in so placing the cleats was that of an independent contractor, exempting the owner from liability for plaintiff's injury. *Louthan vs. Hewes et al.*, 70 Pac. Rep. (Cal.) 1065.

LIEN FORECLOSURE—PERSONAL JUDGMENT.

WHERE, in an action to foreclose a mechanic's lien for work and labor, plaintiff fails to show a valid lien, he can not on the same complaint, and without amendment, have a personal judgment for the debt. *Castelli vs. Trahan et al.*, 78 N. Y. Supp. 950.

MASTER AND SERVANT—INJURIES TO SERVANT.

PLAINTIFF, a hod carrier, was walking up a plank in a building, with a hod of material to deliver on a scaffold. There was not sufficient space between the top of the incline and the overhead joist to enable plaintiff to walk upright, and the hod struck against one of the timbers, causing plaintiff to fall from the plank. Plaintiff testified that he did not look up to see the overhead timbers before he started to walk up the plank, but that, if he had looked, he could have seen there was danger of striking the timbers. Held, that plaintiff was guilty of contributory negligence. *McCarthy vs. Emerson*, 79 N. Y. Supp. 180.

SURETYSHIP.

WHERE a grantee, on taking title to premises, assumes the payment of claims for materials used in buildings on the premises, for which the grantor is liable, the grantee becomes the principal debtor, and the grantor surety. *Hurd et al. vs. Wing*, 78 N. Y. Supp. 574.

A RESIDENCE AT PELHAM, GERMANTOWN, PA.

THE residence which is illustrated on pages 74 and 75 has been erected for Robert M. Hogue, Esq., at Pelham, Germantown, Pa.

In its general style it is Jacobean, a style of architecture used extensively in England during the seventeenth century, and which was founded on the Italian work of Palladio.

The terrace across the front and side, and the walls of the main house, are constructed of long, flat, Chestnut Hill stone. The trimmings, belt courses, copings, and steps are of Indiana limestone. Special features of the cut stone are the carved figures, or bosses, over the main entrance and in the gables. The roof is covered with green slate with copper flashings. Dimensions: Front, 53 ft. 6 in.; side, 66 ft., not including terrace and rear porch. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The house throughout the first floor, except the parlor, kitchen, and its dependencies, is trimmed with old English oak. The hall has a vestibule with a tiled floor, paneled walls and ceiling. At the left of the entrance there is an attractive nook provided with paneled seats. The walls of the hall are paneled to the ceiling, and the ceiling is heavily beamed. The fireplace is lined with Roman brick, and it has a dressed Indiana limestone hearth and facings. The mantel and overmantel is carved and paneled. The staircase has carved newels of handsome design and a balustrade in harmony. The parlor is treated with white enamel, and it is furnished with an open fireplace with brass trimmings, stone facings and hearth, and a mantel of handsome design. The library is provided with a paneled wainscoting five feet six inches in height and an open fireplace furnished with tiled facings and hearth and mantel. An attractive feature of this apartment is the conservatory, which opens from the library. The dining-room, trimmed with old English oak, has a paneled wainscoting, ceiling beams, and an open fireplace. The butler's pantry is well fitted up with drawers, dressers, and sink. The kitchen is furnished with a pot closet, dresser, sink, and range. The laundry is fitted with washtubs complete, and affords ample room for ice-box, etc. The rear hall and stairway are conveniently located.

The second floor is trimmed with white pine treated with white enamel paint. This floor contains three bedrooms, dressing-room, closets, and two bathrooms. The latter are wainscoted and paved with tiles, and furnished with porcelain fixtures and exposed nickel-plated plumbing. This floor also contains a billiard-room trimmed with oak and fitted up with paneled wainscoting, seats, and an open fireplace.

The third floor contains the servant quarters and ample storage room. The cellar is cemented and is provided with a steam heating apparatus, cold storage room, and coal and wood bins. Messrs. David K. Boyd and Lawrence V. Boyd, associate architects, Philadelphia, Pa.

COURTYARD GARDENS.

THE treatment of courtyards and interior spaces with floral decorations is a problem in itself. Interior courts have hardly made their place in American buildings, since that form of plan has not acquired habitat in this country. But a space need not necessarily be enclosed on all four sides to form a court, and an area surrounded on two or more sides may take on a court character very properly.

Glimpses of two interesting court gardens are shown in the engravings reproduced on page 77. One is from the fine house of Mr. E. C. Benedict, Indian Neck, Greenwich, Conn., designed by Carrère & Hastings, architects, New York. The other shows a part of the residence of Mr. C. Oliver Iselin, Premium Point, New Rochelle, N. Y. Nothing could be more unlike than these views, yet they have this in common; close association with the dwelling. Mr. Benedict's court is a spacious place planted with beds and large enough to contain trees and walks. In Mr. Iselin's house dependence has been placed in trees planted in large earthenware pots, and on vines trailed over the walls and balconies. Each has its characteristic effect; each has a beauty of its own; and each is interesting in affording a view in the more private parts of the gardens of these two great estates.

TWO DOORWAYS.

OF the doorways illustrated on page 80 one, with the porch, is from "Greysinghles," the residence of S. Raymond Roberts, Esq., at Glen Ridge, N. J., which has been described and illustrated fully in the March number. Messrs. Horace B. Mann and Perry R. MacNeille, 2 East Thirty-third Street, New York, were the architects. The other is the door of the residence of William Barr, Esq., at South Orange, N. J. Mr. Robert R. Stephenson, architect, 1133 Broadway, New York.

The engravings were made from photographs taken specially for the BUILDING MONTHLY.

Heating Talk

PEAT.

PEAT, says a New York paper, is a vegetable substance, roots, fibers, and moss, found two or three inches beneath the surface of boggy ground. Its black color seems to indicate that it has begun to carbonize. In preparing it for fuel it is simply cut into proper pieces and dried in the sun. It is sometimes worked over with implements, and spread out on platforms to dry, in which case it becomes almost as hard as coal.

It may be burned in a stove, furnace, or open-grate. It makes a hot fire, while it lasts, but it is quick burning, and needs to be replenished frequently. There is considerable ash. It came into considerable use during the past winter, owing to the scarcity of coal.

OIL SOAKED BRICKS.

POROUS bricks alone are available for this purpose; the best are the terra cotta hollow bricks. It should be placed in a shallow dish half full of ordinary kerosene oil and allowed to soak about half a minute. When one side of the brick is soaked in that way, it should be turned over, to allow the other side to soak. If it is a hollow brick it can be handled with tongs or a stove poker without soiling the fingers. As soon as the brick is soaked it is placed in the stove and lighted with a match. It will throw out flame for nearly an hour, emitting enough heat to boil water and cook a dinner for a small family. The oil consumed at one burning costs about a cent when oil is selling retail at twelve cents a gallon.

To heat a room in which there is an open grate some oil soaked bricks can be placed in the grate and lighted. There is no danger of explosions when the oil is burned in that way. The burning oil throws off no offensive smoke or odor. The flame of an oil soaked brick can be extinguished by dropping the brick into a pail of water. After being in the water, the brick can be soaked in oil and lighted again. With a relay of bricks and a kerosene bath, a kitchen stove could be kept going all day without much trouble and at small cost.

BRICKETTING PETROLEUM.

BRICKETTING petroleum, under the Granville patents, is to be undertaken on a large scale, says a contemporary. A plant having a capacity of one thousand tons a day is being built at Port Arthur, Texas, and another one of equal capacity at San Raphael, San Francisco. The petroleum is "compressed" to several times its normal density with the loss of a small volume of gas during solidification. The briquettes burn with intense heating effect, burning from top down. Being naturally absorbent of water, the briquettes are provided with an anhydrous coating.

ARTIFICIAL COAL.

SUCCESSFUL tests of artificial coal made by a "chemical process" have been made near St. Paul. Dr. Rudolph J. Schimper, the inventor of the briquetting process, claims to merely "hasten the process of nature" in converting lignite into coal. It is claimed that the briquettes can be turned out at the rate of one and a quarter dollars a ton.

UTILIZING WASTE HEAT.

A CORRESPONDENT of the Metal Worker describes a method of utilizing heat that would otherwise go to waste that he introduced into his own house. In his section of the country, it appears, a large number of people live in what are termed two-family houses—that is, houses containing complete sets of apartments, one on the first and second floors, entirely separate and distinct from each other. His house was built by himself, and he adds that he appreciated the fact that unless he utilized the heat that went to waste from the cook stove of his tenant on the first floor, no benefit would be derived from it. When the house was erected he provided 8 x 8 inch flues for the kitchen in both sets of apartments. From the pipe hole in the kitchen stove on the first floor he ran clear up to the top of the chimney a heavy 6-inch smoke pipe, and just above the baseboard in the dining-room of the apartment on the second floor he placed an 8 x 12 inch hot air register, while just over the top of this register he completely shut off the flue. He then arranged for air to enter the base of the brick flue so that it could pass up around the hot smoke pipe and flow out into his dining-room. The result has been that his dining-room has been kept comfortably warm without any expenditure for fuel on his part, and as far as he can learn, without any disadvantage to the tenant on the first floor.



PLUMBING FOR A COUNTRY HOUSE.

A DESCRIPTION of the plumbing arranged for a country residence in Connecticut is described by the Plumbers' Trade Journal. After carrying the cast iron soil pipe ten feet outside the cellar wall the drainage is carried eight hundred feet further into a cess-pool through eight-inch drain tile. The cess-pool is of brick and made water-tight. Over the top is placed a cast-iron manhole cover, and through this a vent pipe is carried, to free the cess-pool of its impure air.

Since the cess-pool is water-tight, it is not a difficult matter to empty it of whatever solid matter may collect from time to time. When the liquid matter reaches a certain height, it passes out through the overflow, which carries it on to a sandy surface exposed to the action of the sun. This disposal of the liquid portion of the sewerage is good practise, for the action of the sun is to purify, and as the liquid leaches away into the sand, the action of filtration also purifies it. The cess-pool is built nine feet in diameter and twelve feet deep, which is ample for the amount of sewage that it has to take care of.

The chief means of supplying water to the house and barn is a large windmill located between them. The water pumped by the windmill is carried to two tanks, one located in the barn loft, the other in the attic of the house. These tanks are of steel, the capacity of each being 720 gallons. The well from which this supply is taken is a driven well eighty feet in depth.

The windmill pump forces the water in both directions into each of these two tanks. By means of a stop and waste cocks the supply to either tank may be cut off. The overflow from the two tanks is carried onto the roof. The overflow from the house tank as well as other roof water is carried by the conductors down into two cisterns located on either side of the house.

These cisterns are built of brick, and from them a second supply of water is obtained for the house tank. From them the water is forced into the tank by means of a common house force pump. The force pipe is connected into the supply to the tank from the windmill pump. By means of two stop cocks either supply can be cut off. The water before it reaches the tank passes through a filter.

The water supplied by the windmill is very hard, while that from the two cisterns, being largely rain water, is soft. Therefore the arrangement of the work allows the house to be supplied by either. On washing days, for instance, it would undoubtedly be very agreeable to have a good supply of soft water, and in other ways it can be seen that a double supply of this kind might be very desirable.

The house tank supplies bathroom and boiler and kitchen fixtures. The hot and cold water pipes to the several fixtures are exposed to view. The barn tank supplies water to the watering trough and to the carriage-room, where it is used in washing carriages.

This plant is believed to be much more sanitary than is usual in the country home. The point is that in the country there are no sanitary requirements laid down and no restriction imposed, consequently people do as they choose, generally putting in the work with the least possible outlay. We have all seen the spout from the kitchen sink in many a country home carried to a point near some window, and often to some point where the inmates are accustomed to spend much of their time when out of doors. Not so, however, in the case of the system which we now are considering. While there is nothing extravagant about it, it is put in with regard to sanitary principles.

For instance, in order to carry the house sewage to a safe point away from the house, and to a point where it will not endanger the well water, and where the overflow may be carried to the proper ground for depositing, the drain has been carried a distance of 800 feet. We believe, however, that the comfort to be gained in the knowledge that the inmates of the house are living under sanitary conditions is well worth the trouble and other safeguards that might be pointed out.

MODERN PLUMBING.

MODERN plumbing is concerned with the gravest of sanitary problems. The plumber is no longer a mechanic alone, but is required to be a man versed in the application of the wisest scientific methods to the ordinary problems of living. The plumber's business is to help mankind to live. He must be familiar with the latest advances of science and how to apply them. He must know what has been done in the past—know wherein devices have succeeded and why they have failed. He must know what he himself is about and what he will accomplish.

A COUNTRY HOUSE AT RINGWOOD, N. J.

The illustration on page 73 shows a country house erected for A. L. Loomis, Esq., at Ringwood, N. J.

The building is constructed of stone and wood, with ample piazzas, connected by a terrace, while the whole is covered with a gambrel roof. The underpinning and first story are built of gray and blue stone laid with rock faces with a harmonious effect. The remainder of the building is covered with shingles, which are left to weather finish a natural color. The porch gables are beamed and the spaces filled in with plaster. The roof is covered with shingles and treated naturally. The chimneys are built of red brick. Dimensions: Front, 87 ft.; side, 66 ft., not including piazzas and terrace. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The interior throughout is trimmed with white pine treated with white enamel paint, while the doors are of mahogany. The living-hall forms the central part of the main house, and is separated from the passageway by a cluster of columns which support an archway. This living-hall has a paneled wainscoting and a beamed ceiling. The drawing-room, which is at the left of the entrance, is broad and spacious, is well lighted, and contains an open fireplace, furnished with marble facings and a Colonial mantel. The living-hall and billiard-room have similar fireplaces. The billiard-room contains the stairway, which is an ornamental one and of artistic design. The dining-room has a high paneled wainscoting, a beamed ceiling, and an open fireplace furnished with marble hearth and facings and a mantel of Colonial style. A porch opening from one end of the dining-room forms a private porch for luncheon or tea. The butler's pantry is fitted with bowl, drawers, dressers, and closets, while the kitchen is provided with a large store closet, sink, dresser, and fireplace for range.

The second floor contains five bedrooms, provided with large, well-fitted closets, linen closet, dressing-room and two bathrooms, besides three servants' bedrooms and a bathroom and a storage-room. The bathrooms are wainscoted and the entire walls and ceilings are treated with white enamel. These rooms are provided with porcelain fixtures and exposed plumbing.

The third floor contains several rooms and ample storage. Mr. Bruce Price, architect, St. James Building, 1133 Broadway, New York.

A RESIDENCE AT CHESTNUT HILL, MASS.

The residence which is illustrated on page 71 has been erected at Chestnut Hill, Mass. The underpinning is of red sandstone, with rock-faces as they come from the quarry. The superstructure is of wood, and the exterior framework is covered with matched sheathing and then shingles, which are stained a dark brown color, while the trimmings are painted a dark bottle green. The sashes are painted a cream white. The gable ends are beamed, forming panels, which are filled in with stucco. The roof is covered with shingles and treated in harmony. Dimensions: Front, 47 ft. 10 in.; side, 36 ft., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall, square in form, is trimmed with white pine treated with white enamel. It contains an ornamental staircase with painted treads and balusters and a mahogany rail. The newel post is formed of a cluster of spindle balusters. The parlor is treated in a similar manner and has a low Colonial wainscoting and a wooden cornice. The living-room is trimmed with California red cedar. The fireplace is placed in an angle-nook, and it is constructed of Roman brick with a hearth and facings of the same, and a Colonial mantel; there are seats built in on either side of fireplace and over which there are small latticed windows. Bookcases are also built in. The dining-room is trimmed with oak and has a wooden cornice. The fireplace is built of brick with the facings and hearth of similar brick and a mantel. The butler's pantry is fitted with dresser, drawers, sink, and closets. The kitchen has a sink, range, store pantry, etc.

The second floor is trimmed with white pine and treated with white enamel. It contains four bedrooms, seven closets, linen closet, one dressing-room, and a bathroom; the latter has a tiled wainscoting and a paved floor, and it is provided with porcelain fixtures and exposed nickelplated plumbing. There are three bedrooms, besides ample storage, on the third floor. The cemented cellar contains a furnace-room, laundry, fuel bins, etc. Mr. H. S. Frazer, architect, 8 Exchange Place, Boston, Mass.

ART PRINCIPLES.

THE more subordinate the nature of decorative work the broader should be its treatment. Good work should be founded on what has been done before. Shallow thinkers sometime say that all work should be original and absolutely new. In all the arts a healthy, well-informed, and well-cultivated imagination is beyond and above all rule.—G. F. Bodley, R.A.



KITCHEN VENTILATION.

THE important subject of kitchen ventilation is discussed by an exchange. In seeking the cause for the proverbial crossness and ill health of cooks generally the blame is attached to the bad lighting, overheating, and poor ventilation of the kitchens in which they spend so much time. While it is probable that professional cooks were under consideration when this idea was discussed, there is no doubt that the defects mentioned often apply with equal force to the home kitchen, and it is possible that those who equip such kitchens could improve the conditions with profit to themselves and the occupants. The stove dealer and tinsmith should point out that the cooking apparatus ought to be placed where the cook will not only have a good light on the work, but can also have the diversion of a change of scene and the relief afforded by a nearby window. Such a window can be used with excellent advantage for the escape of excessive heat and for ventilation, and the proper location of the cooking apparatus should be pointed out to architects, builders, carpenters, and owners. There are, however, many existing buildings where these desirable conditions are not found, and it is here that the greatest good and the most profit can be secured. In well equipped kitchens, hoods are placed over the range to gather the steam and odors and carry them off. Sometimes the regular smoke flue can not be used for a vent flue, and then a sheet iron flue with ventilating hood will serve the purpose. Such equipment will exhaust the odors and carry off the foul air and surplus heat and will lead to the need of some fresh air being brought into the kitchen without the chilling effect of opening a window in winter. This should be a simple detail, readily supplied where there is a constant fire, as in a cooking stove, by constructing a flue to bring the fresh air to the stove in such a way that it will be heated before it is discharged into the kitchen.

A SCIENTIFIC KITCHEN.

THE kitchen in the home of Mrs. Ellen H. Richards, a teacher of domestic science, is described in Good Housekeeping as part of a scientific home. This kitchen is a model for any private house. It is well lighted and ventilated, and so arranged that the work can be done with ease and comfort. The cooking is all done with a gas range equipped with a hood, by which all odors pass off without floating through the house. Besides this hood there are two ventilators on opposite sides of the room, opening directly out of doors, which also tend to keep the kitchen free from odors. Hot water for all purposes is heated by pipes connecting with the furnace and a small laundry stove in the basement; and the basement is large, light, well ventilated, and in absolute order. There is never a lack of hot water at any time, and the complaint so often heard in other dwellings that "there is no hot water," might be avoided if this idea was generally carried out. Even in warm weather it is possible to have hot water without heating the house, as the pipes connected with the small laundry stove are for this purpose, and not in any way connected with those of the furnace.

Back of the kitchen is a large pantry with a window. This would please any housekeeper, as it is large, well ventilated, in perfect order, and stored with many good things in the way of home-preserved fruits and relishes. The laundry is also on this floor, which is an advantage when one maid is kept, as there is a saving of strength and time.

THE SMALL KITCHEN.

THE advantages of the small kitchen are thus set forth by a Boston writer. By all means have a small kitchen. A large kitchen with a cellar door at one side, a table at another, and the sink at still another, requires too much walking. Time is consumed in going from one place to another rather than with actual work. Have your range placed in a light, convenient part of the kitchen. In front have a good sized table, containing drawers and spaces underneath for keeping utensils, one portion of the top covered with zinc and the other half left plain. Have underneath the top a baking board which you can easily pull out. The sink should be near at hand. The pantry may be on the other side of the kitchen and be sufficiently large to hold a barrel of flour, a small pastry table, and a convenient arrangement of shelves. The floor may be of hard wood or it may be covered with linoleum or oil-cloth, or the ordinary rubber coverings. A tile floor is exceedingly handsome, but rather hard on the feet, making small rugs or bits of carpet a necessity if comfort is to be considered.

Publishers' Department

HYDRAULIC ENGINE AND PUMP.

THE Rife Hydraulic Engine, manufactured by the Rife Engine Co., 126 Liberty Street, New York, is a simple and most efficient machine for elevating water. It is constructed upon an entirely new application of principles. By means of this engine water at a low head may be made available for raising a portion of its own or other water to a higher level than the supply. If there is a body of water to which the Rife Engine can be connected, placed at a level of two feet or more below the surface, in such a way as to permit the



HYDRAULIC ENGINE AND PUMP.

draining away of the power water, a constant flow of the fluid can be delivered to the higher point.

These engines meet the requirements where water must be pumped to a tank or reservoir, and where there is a fall of two feet or more in some stream, brook, or flowing well which may be used for power.

It is not necessary that the water which is pumped should be taken from the same source as the power water. Clear spring water may be pumped by muddy or impure power water, and filtered by unfiltered water, without danger of mixing.

The engine illustrated herewith can be easily placed on foundations that are inexpensive, requiring merely a firm, flat surface of rock, cement, or ordinary gravel, with no special cap stone, or brick or stone piers, and the space occupied is so small as not to require much of a house.

As the wearing parts are few—only the valves—the expense of maintenance is merely nominal. It is entirely automatic, so constant attention is quite unnecessary, a visit of inspection every few weeks being the most that is called for.

These engines will deliver equally well into an elevated tank, a closed compression tank, the power end of a water motor, an air compressor, or the nozzle of an impact wheel. They may be used, therefore, not only for pumping, but also for supplying power for passenger elevators and electric dynamos.

The machines are built in different sizes, ranging in capacity from five to one thousand five hundred gallons per minute. They will elevate water thirty feet for each foot of fall used, and pump successfully to an elevation of five hundred feet.

The saving is in proportion to the amount of water pumped. The Jay Cooke College, Ogontz, Pa., has had a plant, installed by the Rife Company, in operation for ten years, that cost \$500. The estimated saving has been \$1,000 a year. Six years ago the firm installed a plant in New Jersey for \$600, that delivers 50,000 gallons of water per day to an elevation of 117 feet, and during the six years of operation the cost of repairs has never exceeded \$10 a year, while the saving has been over \$2,000 a year. This company is about to install a plant to pump 1,500,000 gallons per day to an elevation of 100 feet, that will cost something less than \$10,000 to build, upon which it is estimated the saving will be at least \$5,000 a year. The tremendous volume of water which these engines are capable of delivering to given heights, so economically and often under stubborn water conditions, has made these hydraulic pumps very prominent for use in all localities where water power mechanism is needed.

MAGNOLIA METAL.

MAGNOLIA metal is an anti-friction substance, now widely used as a lining for machinery bearings of all descriptions. For use in locomotives and railroad cars, dynamos and electric traction work, high speed engines, iron and steel mills, saw, cotton, woolen, and silk mills, and for steamship service, it is found to be unsurpassed in long lasting, cool running, and eco-

nomical properties. After exhaustive tests by a board of United States Naval Engineers, this material was urgently recommended for use in our navy. It is used largely by mechanical institutions, manufacturers, etc., and its employment is generally understood and appreciated throughout the business world. The Magnolia Metal Company, which manufactures this metal, has its executive office at Nos. 511-513 West Thirtieth Street, New York, and offices and factories in New York, Chicago, Montreal, San Francisco, and New Orleans, with branch offices in Boston, Philadelphia, Pittsburgh, and Buffalo, and an emergency factory in operation at Sterling, N. J. The demand for this particular metal may be strongly indicated by the company's extensive connections, and since its establishment in 1886 the firm has systematically covered every country where the industry has any chance for an introduction with traveling agents specially fitted for the work. The success of this policy in reference to Magnolia metal, together with the production in the past few years of other material, including all grades of babbit, solders, electrolyte, stereotype, linotype, coffin-trimming metals, as well as all kinds of white metals for castings, etc., has compelled the company to enlarge its plants, working capital and operative staff, until at the present time it ranks prominently as an industrial feature of the commercial prosperity of the country. The Chicago address is No. 710 Fisher Building.

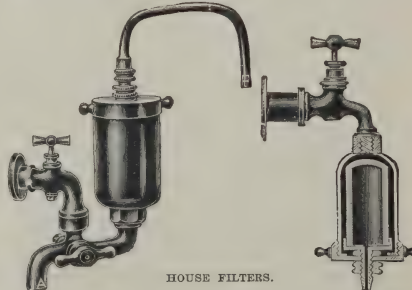
HOUSE FILTERS.

The chief requirements of a perfect filter are that it should absolutely remove all impurities from the water, and that its practical and simple construction enables it to be readily cleaned and kept in a state of original efficiency. These features are embodied in the filter sold by the Berkefeld Filter Co., August Giese & Son, Proprietors, No. 4 Cedar Street, New York, and endorsed by the highest authorities in this and foreign countries.

The first illustration inserted here represents the Berkefeld Filter in connection with a two-way cock. The filter is attached to one outlet of this cock, and by turning the handle the water is forced into the filter, coming out filtered at B, while by turning the handle to the other side the unfiltered water can be drawn at outlet A. When the water is turned on, it is forced through the walls of the filtering cylinder within, leaving all impurities, even typhoid and cholera bacilli and other objectionable matter on the surface, while the filtered water runs off through the outlet B. As soon as the filter stops running, the top cap to which the cylinder is attached is unscrewed and the dirt which has accumulated on the cylinder must be removed with a soft brush. After this, the cylinder is replaced and the filter will work as well as before. This filter gives a gallon of filtered water in three to four minutes by ordinary pressure of forty pounds, and at other pressures in proportion.

The construction of this filter makes it possible to have it on the faucet continually, and at the same time it is never in the way, since unfiltered water can be drawn at will. The advantages of this construction are especially apparent in houses where the supply faucet is located too low to place pitchers, etc., under an ordinary filter to collect the filtered water.

The prime merit of the device lies in the peculiar quality of the filtering cylinder, which is made of in-



HOUSE FILTERS.

fusorial earth from the Kieselguhr mines of Hanover, Germany. The enormous number of exceedingly small pores afford a full passage for the liquid and at the same time stop that of the minutest suspended organic or inorganic matter, while, due to its hard, siliceous nature, the earth is a firm and practically indestructible material.

The filter cylinder or the filter proper is made in several different sizes with enclosing metal case. The cylinders are also arranged in batteries of from 3 to 31 enclosed in cast-iron casing, as shown in the second illustration. These large supply filters are used in factories, hotels, clubs, hospitals etc., wherever large quantities of absolutely pure water are desired. The filters are also used extensively in laboratories; and special constructions were supplied largely to the Astor Battery and the United States Army during the Spanish war.

New Building Patents

The following list of New Patents relating to Building and Sanitary Science is prepared for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

ROOFING TILE. J. Schall, Evergreen Park, Ill. Feb. 17	719,514
TILING BLOCK FOR BUILDING. V. L. McCuskey, Cameron, W. Va. February 17	720,727
ROOF TILE. J. N. Maunlin, Göteborg, Sweden. Feb. 17	720,831
TILE SETTING. J. H. Munro, New York, N. Y. February 17	720,836
TILE FASTENER. H. B. ... Chicago, Ill. February 24	721,246
ADHESIVE BRICK. W. Haybow, Delaware Co., Ind. February 24	721,441
HOLLOW BLOCK CONSTRUCTION. B. L. Blair, Indianapolis, Ind. February 24	721,534
TILE COVERING FOR FLOORS. W. J. ETC. J. E. Starer, New York, N. Y. February 24 (Design)	36,234

CARPENTRY.

WEATHER STRIP FOR DOORS. H. M. Luchina, North Abington, Mass. February 3	719,599
WEATHER STRIP. Grover and Armstrong, Syracuse, N. Y. February 3	719,657
PROTECTOR FOR WINDOWS OR LID OPENING. J. N. Ferguson, Woodlands, Neb. February 10	720,124
REVERSIBLE WINDOW SASH. P. E. Loree, Dayton, Ohio. February 10	720,164
MANUFACTURE FOR DOORS. W. C. ... Oregon. February 24	721,231

CONSTRUCTION.

CONSTRUCTION OF WALLS AND PARTITIONS. J. F. Golding, London, England. February 3	719,580
WALL OR CHIMNEY CONSTRUCTION. J. F. Lyman, South San Francisco, Cal. February 3	719,679
METALLIC ROOFING. G. Huib, Delta, Ohio. February 10	720,030
MONOLITHIC CONSTRUCTION. W. C. Lyon, Hyattsville, Md. February 10	720,185
CHIMNEY TOP. F. Wunderlich, Lebanon, Pa. February 10	720,210
COMBINED CAP AND GIBBER SUPPORT. H. Russell, Milwaukee, Wis. February 17	720,623
EAVES TROUGH HANGER. A. A. Schroder, Vanhorne, Iowa. February 17	720,743
ROOF. J. ... Chicago, Ill. February 17	720,811
SHEET METAL SIDING. E. G. Charlebois, Watertown, N. Y. February 17	720,893
LATHING OR PLASTERING. J. ... Mo. February 17	721,074
SANITARY CORNER PLATE. E. Funke, Newark, N. J. February 17	721,176
BUILDING CONSTRUCTION. D. Higgins, Aberdeen, S. D. February 24	721,188

ELEVATORS.

ELECTRIC SYSTEM FOR ELEVATOR SAFETY APPARATUS. George Hall, Providence, R. I. February 3	719,463
DOOR OPERATING DEVICE FOR ELEVATORS. J. L. Kail, Chicago, Ill. February 3	719,470
SAFETY DEVICE FOR ELEVATORS. E. H. Price, Sioux City, Iowa. February 3	719,692
BRAKE ATTACHMENT FOR ELEVATORS. G. W. Chamberlain, Atlanta, Ga. February 10	720,403
ELEVATOR. G. W. Keamer, Peoria, Ill. February 24	721,571

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIRE AND BURGLAR ALARM. I. S. Bunker, Freshwater, Oregon. February 3	719,563
FIREPROOF FLOOR AND CEILING CONSTRUCTION. Simpson and Shoemaker, Newark, N. J. February 3	719,892
AUTO. FIRE EXTINGUISHER AND ALARM. A. D. Lofber, Washington, D. C. February 3	719,946
AUTOMATIC STATIONARY FIRE EXTINGUISHER. C. W. Esby, Lacombe, N. H. February 10	720,013
FIREPROOFING MATERIAL. O. Mack, Ludwigsburg, Germany. February 17	720,941

HARDWARE.

METAL WEATHER STRIP. H. E. Kenny, Detroit, Mich. February 3	719,472
WIRE HOOK. H. ... Brooklyn, N. Y. February 3	719,593
ADJUSTABLE DOOR HINGE. A. Christerson, Etelhem, Sweden. February 3	719,747
LOCK. J. Schell, Savannah, Mo. February 3	719,883
DOOR CATCH AND LOCK. J. L. Zesiger, Cleveland, Ohio. February 3	719,976
AUTOMATIC SASH LOCK. A. W. Adams, Toronto, Can. Feb. 10	719,981
SEPARABLE HINGE. R. G. Winter, Minneapolis, Minn. February 10	720,304
COMBINED LOCK AND LATCH. E. More, Windsor, Pa. February 10	720,455
WINDOW FASTENER. McVoy and Mivan, Pensacola, Fla. February 10	720,462
SASH FASTENER. G. Simpson, Richmond, Australia. February 10	720,496
DOOR HOLDER. J. H. Carroll, McCall, Ia. February 17	720,560
DOOR LOCK. E. Toth, Lugos, Austria-Hungary. February 17	720,757
SASH FASTENER. C. M. Zirkle, Richmond, Va. February 17	720,870
LOCK. U. P. Townsend, New Britain, Conn. February 24	721,399
HINGE. J. Whitehead, Newburgh, N. Y. February 24	721,641

HEATING AND VENTILATION.

COMBINED VENTILATOR AND WEATHER SHIELD FOR WINDOWS. S. D. Lewis and H. M. Fessenden, New York, N. Y. February 17	720,712
VENTILATION OF ROOMS OR BUILDINGS. Timokhovitch, Moscow, Russia. February 17	720,755

MISCELLANEOUS.

ILLUMINATING PRISM STRUCTURE. F. L. O. Wadsworth, Allegheny, Pa. February 10	720,386
COMPOSITION FOR PLASTER FOR WALLS, ETC. H. M. Harbottle, Los Angeles, Cal. February 17	720,790
ILLUMINATING GLASS STRUCTURE. F. L. O. Wadsworth, Williams Bay, Wis. February 17	720,897
ILLUMINATING STRUCTURE. F. L. O. Wadsworth, Williams Bay, Wis. February 24	721,258, 721,257, 721,258, 721,259

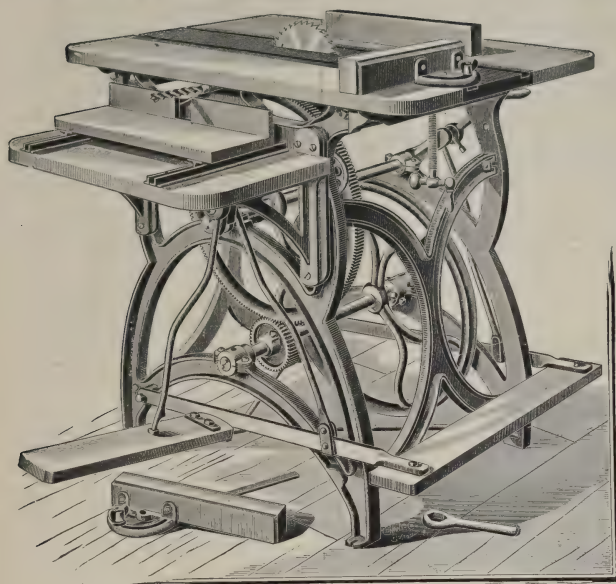
PLUMBING.

FLUSHING APPARATUS FOR CLOSET. F. Light, Louisville, Cal. February 3	719,598
WATER CLOSET. P. Haas, Dayton, Ohio. February 10	720,021
SANITARY COVER FOR CLOSET BASIN SEATS. H. W. Leitch, New York, N. Y. February 24	721,576

TOOLS.

CARPENTERS' PLANE. A. E. Church, West Hartford, Conn. February 17	721,017
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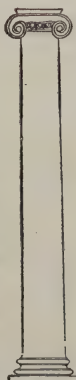


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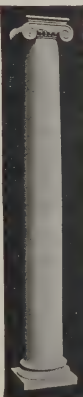
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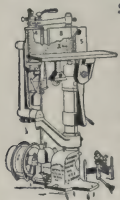
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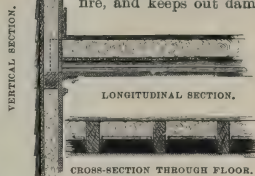
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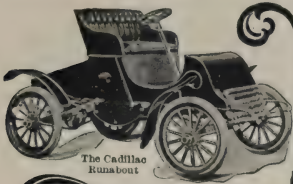
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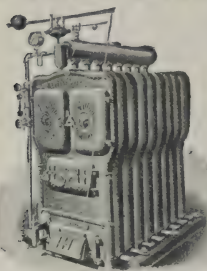
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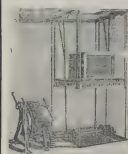


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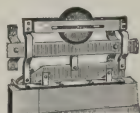
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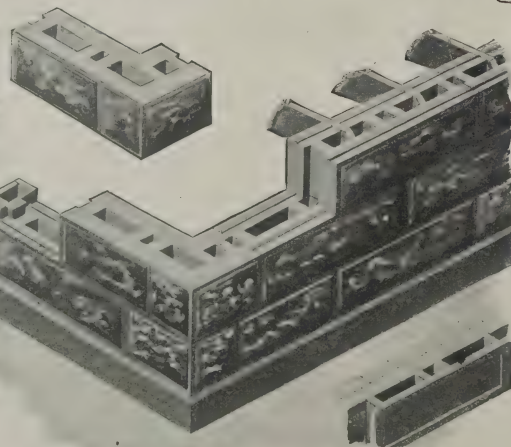
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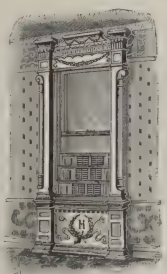
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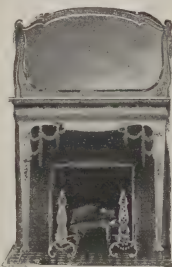
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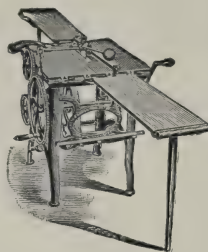
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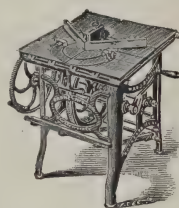
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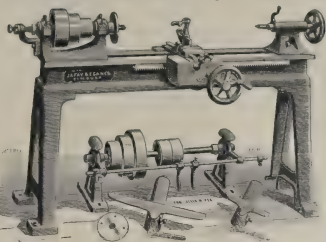
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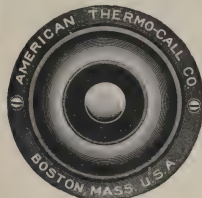
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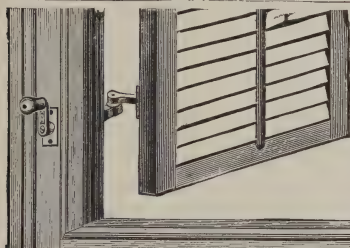
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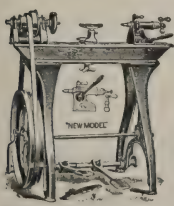
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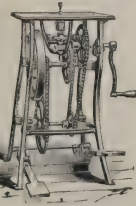
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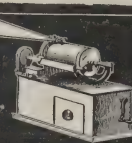
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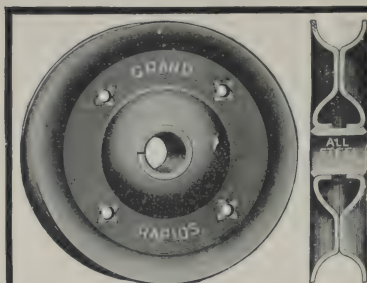
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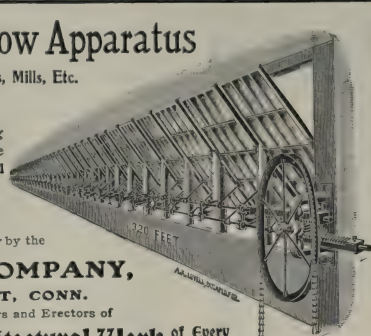
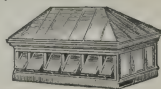
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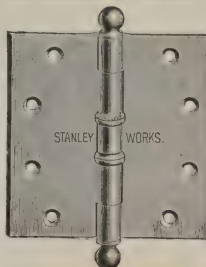
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Building Monthly.

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A LIBRARY IN LLEWELLYN PARK, ORANGE, N. J.—See page 109.

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No. 361 Broadway, New York

NEW YORK, MAY, 1903

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*The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

ATTENTION has already been drawn in these columns to the remarkable series of autobiographies in house building being published in a journal of large circulation. These tales continue to appear monthly, and have already included some of the most interesting chapters in the history of domestic economy that have been laid before the public. No salary appears to be too small to hinder one from owning one's own house if one is willing to run the risk and will assume the personal obligation of heavy debt. Hundreds of dollars are saved from incomes apparently too small to provide the recipient with the ordinary comforts of life. Sad tales of privation and hardship many of them must be in the cruel reality; yet there is inevitably the house to show for all the labor and pains. The least that can be said is that there is always something definite obtained by the effort.

MEANWHILE a clerical gentleman, residing in the State of New York, has come forward with a detailed statement of his personal living expenses, which have averaged \$12 per month. This, surely, is the record, and is something quite beyond the ordinary. Two dollars per month represents the expenditure for rent; the items for food, which does not appear to include meat, are given separately; 75 cents per month is allowed toward a single suit of clothes per year, and 51 cents is contributed out of the total each month to general church expenses. Not to be outdone, another gentleman comes forward with testimony to the effect that he survives on \$10 per month. And so the economic contest goes on. It does not seem as though

there could be many joys in such existences, and these figures certainly represent conditions that are entirely sporadic and without many imitators.

THE interest in ancestry and descent which is now so marked a feature of current life has directed attention anew to the advantages of heraldry in decoration, and the highly decorative effects that can be had from the use of arms and crests. Properly employed very beautiful results can be obtained from such devices. Three things are to be considered in their use. The arms themselves must be correctly portrayed; the work must be artistically executed; and the user of the arms must have unquestioned right to use them and to display them. The latter is, of course, a very delicate matter, since there is an extended impression in America that coats of arms are frequently used by those who have no heraldic right to them. As heraldry is distinctly a mediaeval institution, and as our country is without mediaeval history of its own, this is likely often to be the case. Apart from this, however, arms can often be made highly decorative, and their continued use is an indication of pride in family history which is often a good and helpful thing in itself.

THE KING of England has written a letter on the subject of closets, and the importance of these useful household adjuncts is likely to be greatly increased in consequence of his royal interest in them. The occasion of the royal letter was a visit to some recently finished workmen's dwellings, which pleased him vastly, but which seemed to him somewhat deficient in the matter of closets. Edward VII. has, for many years, been regarded as a wise and sagacious person, and his present venture into domestic architecture is certain to add greatly to his fame and increase his popularity among the women folk of his kingdom. Closets are necessary and useful in every house, and it seems difficult to have too many of them. Now that royalty has called attention to their importance it behooves the architects to give them the attention they deserve.

AMERICAN art for American cities should be one of the cardinal principles to be followed in all public work. American statues, American mural paintings, these are the needs of American communities. That this is not always believed is demonstrated by the accounts of a notable piece of mural decoration proposed for a Massachusetts city. It is true that the artist in this case had spent ten years in America; but he is an Italian by birth and will complete the work in Italy. The merits of the painting are quite beside the question. However great they may be the fact still remains that American artists have been ignored in this work, which, strangely enough, is to adorn a memorial erected by Americans for an American who practically built the city in which it will be placed.

THE SUBURBAN HOUSE.

THE suburban house differs from the country house and the city house chiefly in what it implies instead of what it is. Structurally and in every way the city house is differentiated from every other sort of house, and stands in a class of its own. The suburban house stands midway between it and the country house. In the latter there is, presumably, abundance of room, and it is placed in the midst of a considerable estate, or at least in true country surroundings.

But the suburban house has some qualities of its own, which, in its turn, are both distinctive and characteristic. It is smaller than the country house—the comparison, of course, is made with a house erected for pleasure, and not for the business of farming and stock raising—its grounds are more restricted, its neighbors are closer at hand, and its surroundings present a somewhat makeshift air that belongs to the suburban house and to no other kind of structure.

Yet the suburban house is not to be condemned because of its deficiencies. It is a very useful and valuable sort of dwelling. It is the home of the great middle class, of the people able and willing to supply themselves with a certain number of luxuries, but quite impossible of commanding the useless extravagances of the very rich. It is the outlet of the city, and, in a measure, the safety valve of modern city conditions.

The suburban house need not be a modest structure, and as a matter of fact it is often a very expensive dwelling. The suburbanite does not set about building his dwelling or renting or buying one already constructed without being keenly alive to everything he should have. Suburban life entails some drawbacks to people accustomed to city existence only, and having enjoyment only in the life that is characteristic of large towns and crowded communities. If he moves out into the suburbs he must be attracted thither by conditions and advantages which he does not possess in the town, and which will offset different conditions and advantages to which he may hitherto have been accustomed.

The suburban house expresses freedom from restraint; it is the home of children; it means purer air; it means more room to move around in; it means gardens; and it implies a social life which years of city living may never engender. These are matters of first importance; and when to them is added the material advantage of lower rents the superiority of the suburban house over the city dwelling is established. There are long rides by trolley or train; there is the necessity of keeping early hours; there are difficulties with limited grocery, butcher, and bakery service; there are other practical drawbacks; but over and beyond these is the abiding sense of space, of freedom of movement, of ample air and sunlight, of a place to live in.

And that is exactly what a house is for. It is neither to look at nor to serve as an ornament to a highway. That it should be ornamental and should be viewed with interest are matters of course that are extremely desirable, but, after all, it is the house within that counts; that makes suburban life bearable; adds to its joys; increases its advantages; cements its superiority to every other sort of living unless it be the country life pure and undefiled.

Not many people can afford country houses, for that generally, although not necessarily, implies two houses—one in the city and one in the country. But the suburbanite is anchored to his suburban house. A week or two holiday in the midst of summer is perhaps the most that can be afforded, and perhaps the most that is needed; the balance of the year must be passed in the suburban dwelling. The suburban house is, therefore, both a summer and a winter dwelling; it is a permanent residence, and it is the only residence. And if it is well situated, is well built, is charming within and without, is supplied with every essential modern convenience, and is surrounded with other charming houses filled with charming people, it affords the pleasantest kind of a life, and is doing more to humanize humanity than any other single resource of civilization.

So rapid has been the development of suburban living in our great cities that almost every purse can find in these outlying districts houses to suit them. It is, however, an interesting circumstance that suburbs develop in classes. The cheaper houses do not mix well with houses of higher cost; the fine roads and spacious gardens do not, as a rule, alternate with narrow lanes and mimic dwellings. Whole districts are built of houses of some cost, and whole districts of houses of little cost. The latter, indeed, have yet to be made interesting and beautiful; but they exist, and as they have their place in the life of the day they are neither to be ignored nor neglected. On the whole this distinction appears to be a practical one; for, while it brings people of the same average means all together, raises or lowers living expenses in a corresponding manner, perhaps tends to class distinctions, there is no apparent advantage that would seem likely to accrue by mixing people of various means, or of distributing cheap houses among expensive ones.

The suburban house is a type of progress. It may be hastily built and poorly constructed; it may not even be good in design. But it indicates an honest effort and speaks of good intentions; and as each occupied suburban house means one more victim escaped from the city's heat and filth, so it stands as an indication of progress, hints at a better life, indicates a wiser appreciation of existence. Wherever built it is a structure of good intentions, and it does as much as mere mortar and stone and brick and wood can do to help humanity.

The suburban idea finds expression in the suburban house. It is the center of suburban life. It helps its expansion and it has become a national institution. It increases the influence of the city by extending its ramifications into the country. And conversely it brings the country to the city by bringing it as close to the center of population as the built-up portions permit. Whether it is so far reaching as to attract the country folk to the city may be questioned. That influence has always been potent and always active. But if the suburbs offer nothing of interest or value to the country people, it offers much of value to the city liver and helps to leaven that terrible aggregation of humanity in a thoroughly wholesome and straightforward manner.

Thus the suburban house stands as a distinct contribution to the betterment of city life. It not only affords pleasanter and more healthful accommodations than can be found in city limits, but it provides living places for persons of average means which are far in advance of anything they could command in built-up sections. Better people live in them than in the tenements; better children grow to maturity in them; more returns are had from the money invested. Suburban life may not be ideal. It may have its drawbacks. It may, at times, be irksome. Yet rightly viewed and rightly lived it is a life filled with compensations and recompenses.

TALKS WITH ARCHITECTS

A TERRACED GARDEN.

THE carriage drove up rapidly behind the house, and came to a standstill beneath the porte cochere. The wonderful beauty of the scene was almost bewildering. Surely, was my first thought, the steps that Jacob saw in his immortal dream must have been not unlike this series of terraces. For there, before us, beyond a brief stretch of sward, and yet at some little distance from where we alighted, was a flight of terraces, a garden in the air, a group of hanging gardens, each higher than its predecessor, yet each, if not more beautiful than the one that immediately preceded it, at least contributing a special note and emphasis to the splendid effect of the whole. There are many gardens in which one may look to the right and the left, before and behind one, and see gardens on every side; but here, not only were gardens stretched out on each side, but they rose high in midair, one above the other, until, at the top, the view was closed by a thick growth of trees.

"No wonder," I exclaimed to my host, "that you do not care for the view from before the house, when you have this astonishing panorama behind you!"

Yet, as a matter of fact, when we had passed into the house, and out onto the porch on the front, there

the other, each finished, as it were, with a distinctive crown of foliage or of plant life which made each one distinct, and which still gave each a definite part in the harmony of the whole.

"Do not for a moment," continued my guide, "imagine that each of these gardens—for each terrace is actually a distinct garden in itself—do not imagine that each is a simple mass of flowers.

"With the exception of the two lower ones, the terraces are simply used as kitchen gardens, the borders only being laid out in long flower beds, which conceal the utilitarian use to which the terraces are really devoted. The gardener who has charge of the property makes use of low growing flowering plants as the borders of the lower terraces, while on the higher terraces taller varieties of plants are used. Were high flowering plants used on the lower terraces, the individual effect of each terrace would to a certain extent become confused. The color scheme of each terrace is carefully worked out, and one terrace will be found provided with a border of red, while the next will be rich in yellows or purples. The borders are so laid out as to have each plant in its season followed by another variety, so that the garden will be in bloom during the entire summer.

"The first terrace above the porte cochere and the driveway is a sloping grass bank adorned by a marble

"The bay trees are, of course, taken within doors in the winter, but all the other plants and shrubs in this part of the garden are hardy. We have found the box and cypress to be the best. As many varieties as possible have been used, and some very charming effects have been obtained by a proper combination and variation.

"The floral garden, on the other side, is formal in plan, in so far that that, too, is laid out in regular beds and patterns; but we have avoided anything like carpet gardening, and planted for effect of color only—great masses of bloom and foliage—the simplest method, which gives the most effective results."

And then we climbed slowly toward the top, the steps marked off with arches of vines and with ornamental jars and vases. It was a stiff climb of more than a hundred steps, but it was well worth the fatigue, for each new terrace, with its wealth of vegetable and small fruit growth, gave a fresh note of interest in the delightful ingenuity of the scheme, while below we had enjoyed only its beauty. The journey upward was needed to make clear the merits of the whole plan, and to demonstrate the remarkable practical utility of the plan. The summer-house among the trees at the apex was an agreeable resting place, and the view it afforded was superb.

The talk fell into the general conduct of the place.



OFFICIAL BUILDING OF THE KÖNIGLICHES LAND- UND AMTSGERICHT, BERLIN, GERMANY.

From Blätter für Architektur und Kunsthandwerk.

was there a fine view, across lawns and roads and fields and trees, with New York itself—a mere speck in the landscape—dimly distant at the further point. I looked and wondered and enjoyed it all; yet the view, as a whole, was not unlike many that may be seen from many a front porch in the metropolitan neighborhood.

"Come," I said. "The terraces are the thing here. Let us go back, and you will tell me how they happened to be made."

My host smiled genially, and in a moment or two we were once more looking up eagerly at this wonderful ascending garden.

"The terraces are entirely natural," he said, "although of course their development, utilization, and actual form are artificial. They are natural because the mountain itself is natural; they are natural also because here was a considerable stretch of ground that called for treatment of some sort, which must be utilized and beautified, in short, and a series of terraces, rising one above the others, seems an entirely natural method of treatment.

"They are artificial in that, as a matter of course, the terraces have been given natural form, have been leveled and faced with grass, and laid out, as you see, in various ways."

Yes, there they were; the banks of rich green sup-
-porting great stretches of gardens, each differing from

fountain copied from a font in an Italian cathedral. The second terrace is the one illustrated in several of the photographs reproduced in connection with the article. It is some fifty feet in width and several hundred feet long. The garden was laid out in geometric form with graveled paths some thirty years ago. One would hardly imagine this perhaps, as the border box has been kept low trimmed and close cropped.

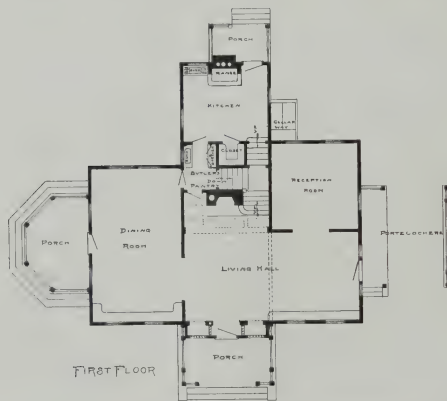
"The formal garden in its present method of treatment is comparatively new, having been planted barely two years. Even in this brief time some experiments have been tried and some disappointments met with. We knew, of course, that the yew would not flourish here, yet we made a few trials, only to have our theoretical knowledge confirmed by personal disappointment. I do not think that in this climate we can approach the great beauty of the English formal garden, in which the yew counts for so much. We must be content with other plants and somewhat different results.

"I think the chief claim we would make for this garden is that it is an American garden. The plants and shrubs are either native or those that especially flourish here. The lay out is simple and straightforward, as good plants and shrubs have been chosen as possible, and to us, at least, the results justify the time and expenditure that have been put upon the place.

It was obvious that the terraced treatment was exactly the use to make of the hillside behind the house, and it was obvious also, to those who were privileged to see and visit it, that the effort had been fully compensated for in the result. An ingenious system of piping along each terrace permitted of daily and nightly sprinkling if it were needed. The estate boasted no ornamental conservatory, as it was a summer residence only; but working greenhouses were used for propagating the plants needed in the flower beds, and for the care of the large bay trees of the formal garden.

Several views of this wonderful and unique garden are given in this issue of the BUILDING MONTHLY. The terraces themselves are shown on the cover. The lower terrace is missing in this view, and the series begins with the ornamental terrace containing the formal garden. Other views are given on page 95. A photograph of the formal garden shows the admirable manner in which it has been laid out and the unusual beauty of the immediate surroundings. The smaller views represent lesser bits—a stone seat near the house, and the sun dial, recently imported from England, in the path leading up the terraces. Like most gardens, it is a place to be seen rather than described; but its great series of terraces are certainly unique, and make it one of the most remarkable and interesting gardens in the neighborhood of New York.

BARR FERRELL.



A SUMMER HOME AT RYE, N. Y.—See page 105.
MR. HENRY C. PELTON, ARCHITECT.



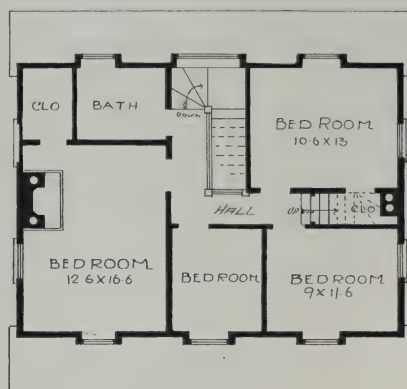
DINING-ROOM.



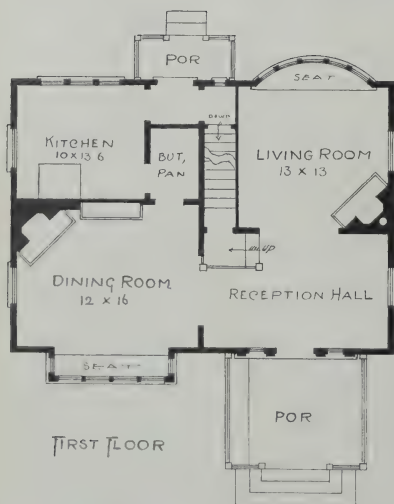
LIVING-ROOM.

A SUMMER HOME AT RYE, N. Y.—See page 105.

MR. HENRY C. PELTON, ARCHITECT.



SECOND FLOOR



FIRST FLOOR

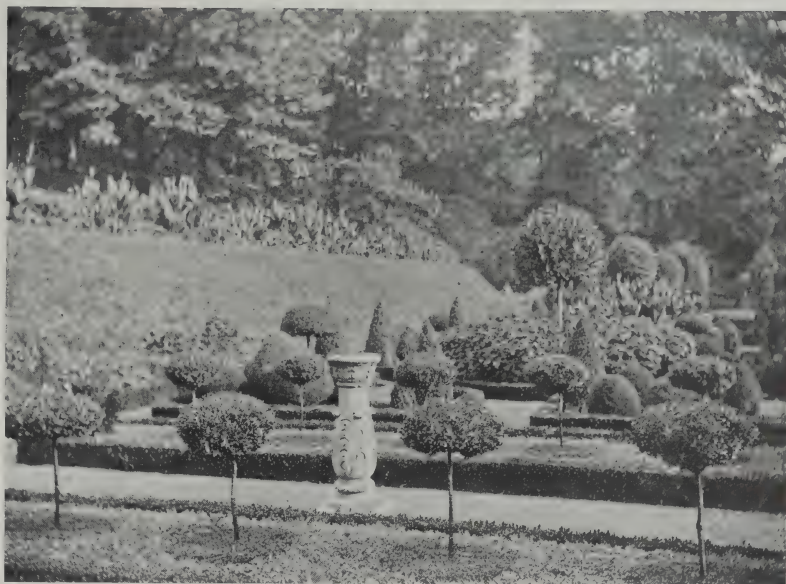


A COTTAGE AT MAPLEWOOD, N. J.—See page 109.

MR. JOY WHEELER DOW, ARCHITECT.



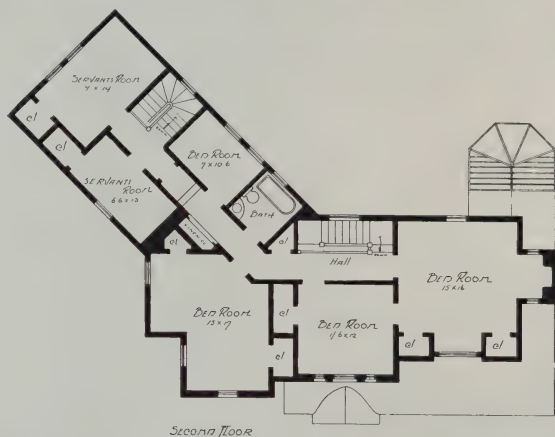
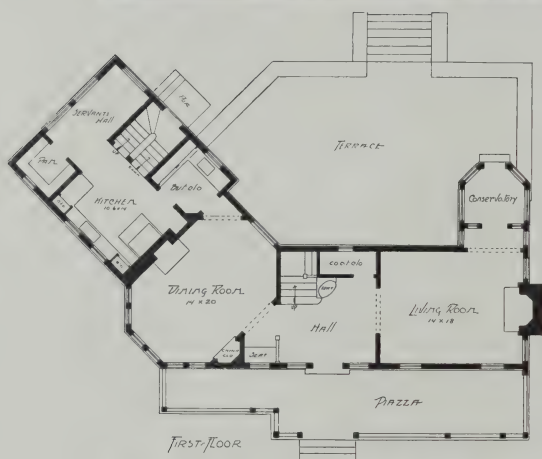
AN ITALIAN SEAT.



AN ENGLISH SUN DIAL.

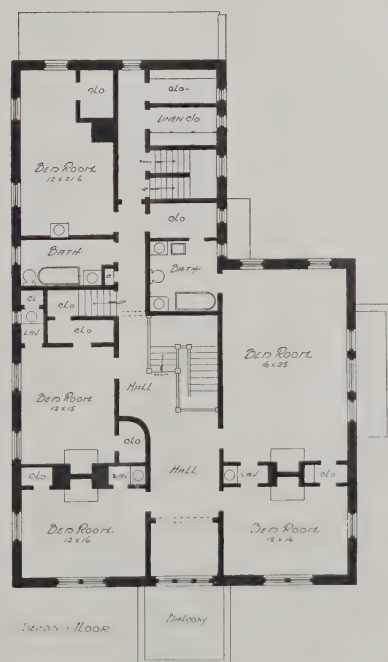
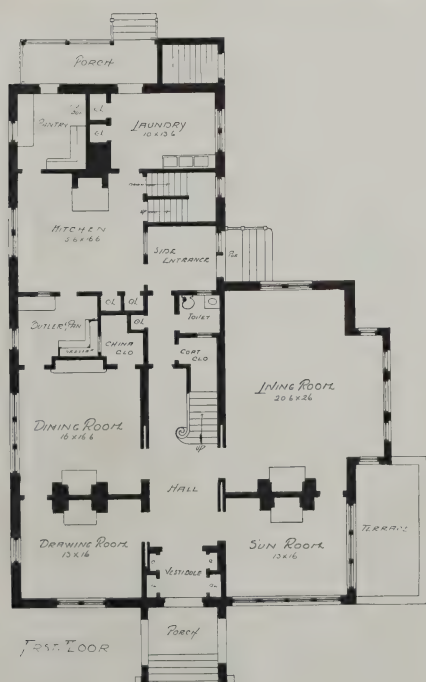


THE FORMAL GARDEN.



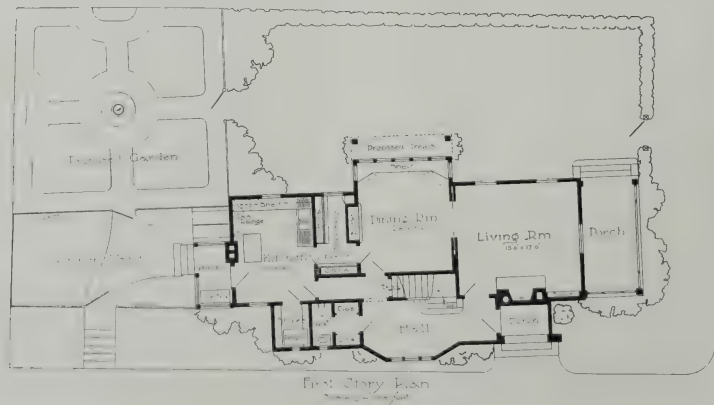
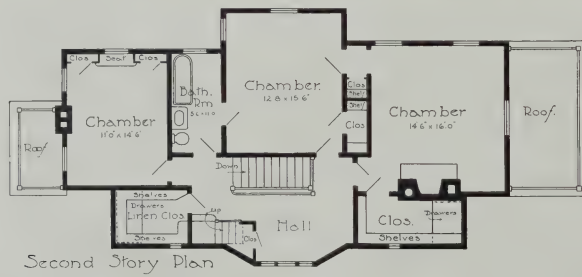
A STUCCO HOUSE AT LAWRENCE PARK, BRONXVILLE, N. Y.—See page 109.

MR. WILLIAM A. BATES, ARCHITECT.



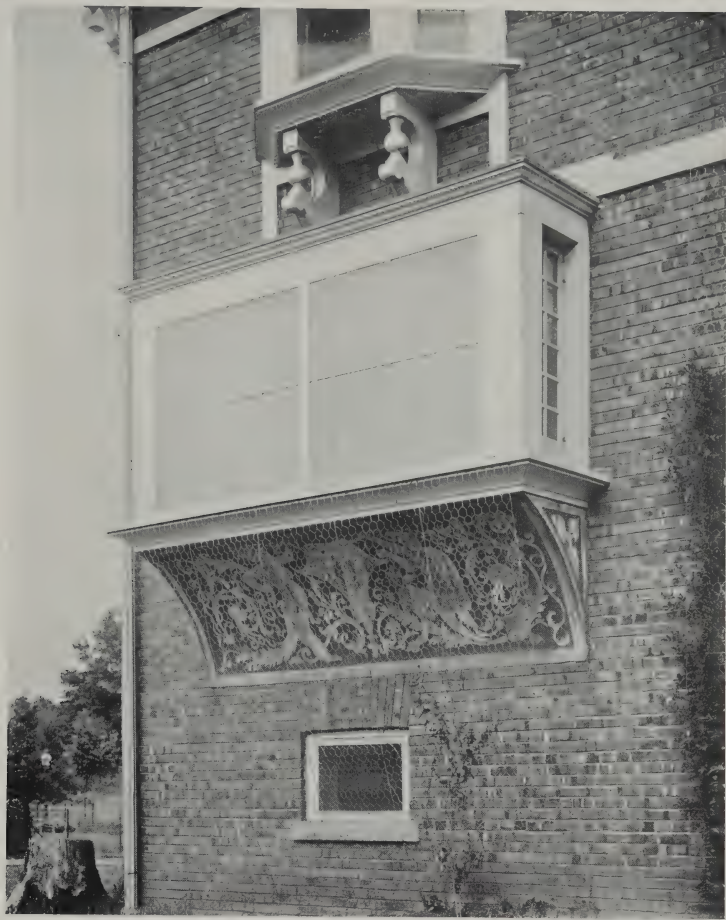
A BRICK RESIDENCE AT SPRINGFIELD, MASS.—See page 105.

MR. G. WOOD TAYLOR, ARCHITECT.



A HOUSE AT SPRINGFIELD, MASS.—See page 108.

MR. EDWIN J. PARLETT, ARCHITECT.

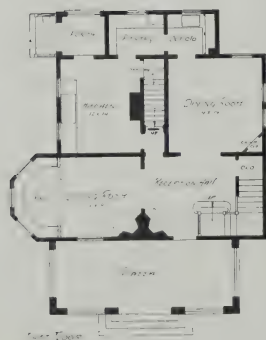
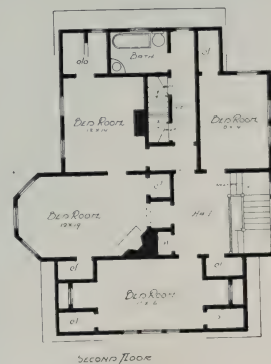


RESIDENCE OF J. W. COMBS, ESQ., SOUTH ORANGE, N. J.
MR. JOHN T. BAKER, ARCHITECT.



RESIDENCE OF DEAN ALVORD, ESQ., PROSPECT PARK SOUTH, BROOKLYN, N. Y.
MR. J. J. PETIT, ARCHITECT.

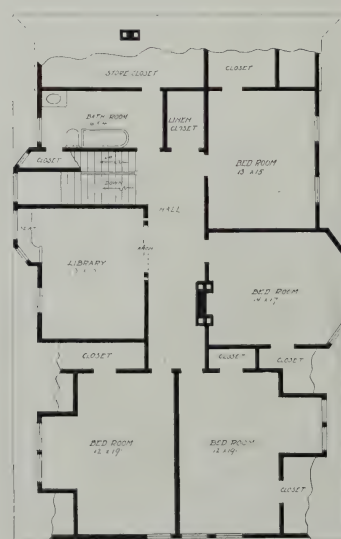
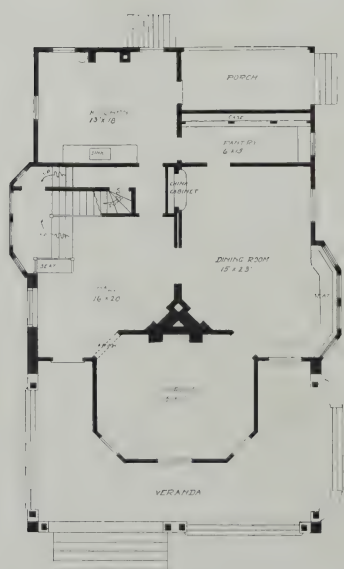
TWO BAY WINDOWS.—See page 108.



A DWELLING AT NEW BEDFORD, MASS.—See page 106.
MR. NAT. C. SMITH, ARCHITECT.



MEMORIAL CHAPEL OF THE STANFORD UNIVERSITY.—See page 107.



- SECOND FLOOR -

A RESIDENCE AT WARREN, PA.—See page 106.

MR. E. G. W. DIETRICH, ARCHITECT.



A RESIDENCE AT WARREN, PA.—See page 106.

MR. E. G. W. DIETRICH, ARCHITECT.

THE PASSING OF VENICE.

By F. W. PARSONS.

SINKING OF THE SUBSOIL AND DECAY OF VENETIAN MONUMENTS.

THE gradual disintegration and decay of Venetian monuments of architecture and art, and the ultimate disappearance of the lagoons, are questions of universal interest, since Venice constitutes part of the artistic patrimony of the world. The attention of all lovers of art has more immediately been drawn to this matter by the collapse of the Campanile of San Marco, but the downfall of Italy's giant tower, the lamentable condition of the Doge's Palace and of the old residences of the Procurators of St. Mark's (occupying the north side of the Piazza), the more or less serious impairment of St. Mark's Cathedral and of several celebrated churches are mere matters of detail, before the larger subject of the gradual undermining of all Venice and the certainty that, in the fullness of time, the lagoons will vanish from sight.

The instability of the subsoil of Venice is the subject of most vital concern of all unfortunate conditions now existing. Although, in itself, beyond the power of man's control, the causes of this subsidence and the ratio of its progression can be determined, and, with these data as a working basis, ingenious means can be devised, or exercised, to mitigate the deplorable results.

Not only the subsoil of Venice, but also all that part of the Adriatic coast from Aquileia to Ravenna is in a progressive state of subsidence, or descent. In the vicinity of Venice, or, more properly speaking, in the city itself, this ratio of sinking has been variously estimated. Commendatore Giacomo Boni, the famous Roman archaeologist, now in charge of the Regional Office for the preservation of Venetian monuments, estimates it at about nine centimeters in a century. Flammarion, the well-known French astronomer, has placed the ratio at one hundred and fifty-five millimeters per century. The celebrated geologist, Steppani, says that Venice sinks twelve centimeters every hundred years. It is reasonably certain that, from the period of its foundation until now, all Venice has sunk about two meters fifty centimeters.

The pavement of herring-bone brick, that lined the Piazza San Marco in A. D. 1500, and is represented in Bellini's great picture of the Procession of the Holy Cross, now lies seventy-two centimeters below the present level of the Piazza. In 1885, this pavement of Bellini's time was found to be situated about eleven centimeters above the level to which water rises at high tide, and it is to-day not far above the average level of the sea.

In 1732 it was thought necessary to raise the pavement of the Piazza San Marco thirty-four centimeters, and, at a comparatively recent date, it was again heightened by a few centimeters, accommodating the levels, then established, to the necessities of aesthetic effect, as considered in relation to the Cathedral of St. Mark. To pass from the open arcades, that flank the Piazza San Marco, on the north and south, it is always necessary to descend one step into the atrium, or court, of the Piazza, and this atrium is, now, not infrequently flooded in winter, something of rare occurrence in past centuries.

The crypt of the Cathedral of St. Mark formed a part of the earlier church, originally occupying this site, but destroyed by fire in the tenth century. It is obvious that this crypt could not have been built under water.

Through the sinking of the vaults that sustain the magnificent pavement of St. Mark's, all the older portions of this precious pavement-work appear like waves of the sea, and only the restored and straightened sections are in a normal state.

The marble panchina, or quay, of the Doge's Palace which served, during the days of the Republic's glory, as a landing place for the Ducal barge, on the east side, fronting the rivo of the Bridge of Sighs, is now far below the common level.

Throughout Venice, the pavements of the streets and the ground floors of houses continually have to be elevated. Many other evidences of the sinking of Venice abound in public buildings and palaces, but their instability has sometimes been aggravated by man's incompetency and neglect, as I shall presently show by some details of the static condition of the Doge's Palace, the former residences of the Procurators of St. Mark's, and the famous churches of St. John and St. Paul, the Frari, San Zaccaria, etc.

The continuous subsidence of the soil extends throughout the coast country of all this great gulf of the Adriatic shore, from Aquileia to Ravenna, a fact that is illustrated in various ways. For instance, all the Roman roads that lead to the coast at Aquileia and elsewhere, for a considerable distance, continue in the sea, and Roman roads were certainly not made by submarine divers. Many mosaic pavements are now entirely under water.

The composition of the soil of Venice and its vicinity has been accurately ascertained through the sinking of artesian wells, and the strata thus revealed correspond to that of the adjacent country on the mainland. These strata of the subsoil are composed of clays, of boggy peats, of turfs, of aqueous sands, until a depth of thirty-five meters is reached; then is found a stratum of three meters of compact, solid clay, having great powers of endurance. Below this solid clay there is a successive alternation of strata like those near the surface, that is to say, oozy turfs, sandy clays, of various colors, and aqueous strata.

This unstable soil of alluvial character, has been formed, in the lapse of ages, by silt brought down from the circumjacent mountains by various rivers of the subalpine region. This coast land has an inevitable tendency to dissolve itself into the Adriatic Sea.

The uniform persistence of this progressive declination is evidenced by artesian wells of diversified depth. To obtain from all these the same waters, wells are sunk to a less depth the farther one goes from the sea. Moreover, they manifest the influence of high and low seas by increasing or diminishing their flow.

Builders of the foundation of the fallen Campanile of San Marco, and of many buildings and towers of later date, were careful not to drive piles, or palisades, entirely through the solid stratum of clay, already described, as, in that case, these piles would have become undermined by contact with the alluvial sands of the Venetian estuary.

It was rightly supposed that the natural hardness of this clayey bed would be enhanced by the pressing together of piles, thus binding the clay into a compact, solid mass, capable of sustaining an enormous weight. This condensation of the clayey bed, solidified by the lateral force of piles, so pressed together and borne down from above, explains, to a great extent, how the giant bell-tower of San Marco suffered but a slight (almost imperceptible) inclination throughout the thousand years of its history.

On the other hand, while this lateral friction of piles against the clay has been an advantage, it has aggravated the natural condensation, increasing density and sinking of the clayey strata upon which the upper soil or surface land of Venice rests. The mass, or number, and bulk of the piles sustaining most of the buildings of Venice have an appreciable influence upon the gradual lowering of the soil, through the increasing density already noticed.

That the dissolution of the subsoil is in a seaward direction, or, at least, always toward the canals, can be demonstrated to any visitor to Venice who seeks the proofs. For years, the east side of the Palace of the Doges has been slowly sinking, and this subsidence is apparent from the Grand Canal, or from any place where a close observer will readily notice that the southeastern angle, at the junction of the rivo of the Bridge of Sighs with the Canalazzo, is lower than the southwestern corner on the Piazzetta.

The Campanile of San Stefano, whose pronounced inclination has occasioned great controversy and a division of opinion among experts, over the question of its decapitation, leans markedly toward the rivo, or small canal. Its inclination is one meter sixty-three centimeters upon a height of about seventy meters. The Campanile of San Giorgio dei Greci also leans so decidedly toward the very picturesque rivo that winds past the Greek Church of Saint George, that the bells have quite recently been removed from it, as a measure of precaution. Many buildings, of various kinds, show the same general tendency, always manifested in the direction of the canals.

In the case of palaces along the Grand Canal there is a special cause of disintegration and decay that will hasten their ruin if not done away with. This is the upheaval of waves produced by the hideous steamboats that have, of recent years, plied between the Ferrovia, or railroad station, and the Public Gardens, continuing in summer, in quick succession, to the Lido baths. The foundations of these palaces, on the Grand Canal, that have so largely contributed to the beauty and fame of Venice, were not built to stand such a strain as is produced, in modern times, by this agitation of the waters.

The Society for Public Art has repeatedly discussed this subject and vainly pointed out the vital importance of action in the matter. Members of the society have found, by personal examination abundant evidence of corrosion by the surging waters, stirred up by the screws of these ugly little steamboats. The water, flowing in upon and then receding from the foundations of buildings, acts in the manner of a suction-pump. At least, pressure and suction alternate with such force that water is driven into any crevices between brick and brick, or stone and stone. Slight cavities are enlarged and cement is sucked out, while mud and mire are deposited in its place.

Extensive dredging, hitherto conducted by the government, throughout the Grand Canal, has been imprudently carried on. Cuts have been made too deep and much too near the palaces. Although these build-

ings have been alike subjected to the same injurious influences, they are not all in the same degree of preservation, and general impairment, from the causes I have indicated, has not, everywhere, produced uniform results. Having been erected at various periods, the diversity of the epoch of their erection carries with it a most notable difference in the mode of their construction, in the quality of materials employed and in the species of mortar used. According to Commendatore Giacomo Boni, architects, already, at the close of the sixteenth century, no longer followed any other precepts than those of the Roman school; treated stone as it ought to be treated when utilized properly, not by the systems of timber, and they knew how to connect their building masonry with mortar affording the greatest power of endurance and resistance. It is certain that edifices of this period, and that succeeding it, present, to the corrosion of the water, a more efficacious resistance than is shown by older buildings.

Other influences than the subsidence of the soil have contributed to weaken the campanili, or bell-towers, not only of Venice, but of all Italy. Their deterioration has been brought about by vibrations produced from the sound of bells in flight. Boni has calculated that, after three centuries, an Italian campanile is generally found in a critical state, wholly through these vibrations. Of course, the bells are rung in the old style, with a complete or partial revolution of the bell itself and a heavy jarring from the clanging tongue within it.

Some observers point to other natural forces than those already mentioned as having exercised a possible influence upon the sinking of the land. Partisans are to be found of the untenable theory that it is not so much the land that has given way, as the sea which has raised its level. Able scientific authorities demonstrate that the sea recedes from Venice and invades other parts of the European continent, especially the French coast. Astronomical conditions are said to have contributed to this result.

The eventual disappearance of the lagoons is only a question of time. The silt and heavier material brought down in great quantities by tributary streams are less serious, however, than the gradual recession of the sea.

Earthquakes and declinations of volcanic origin have played sad havoc with neighboring places, and the eminent geologist Commendatore Lodovico Pasini is of opinion that the lowering of the soil of Venice has been favored, or induced, by volcanic and gaseous phenomena. At least, he is quoted in this sense by Signor G. B. Bellati, to whom I am indebted for several facts I have stated without special reference to him as my authority.

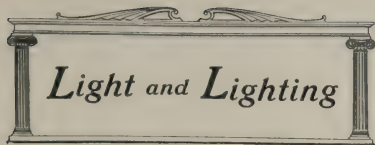
Penetration into the earth, through this section of Italy, has brought to light mud-baths with thermal springs and efficacious therapeutic properties. In the Adriatic Sea currents of warm water are very noticeable, and submarine exhalations demonstrate subterranean fires not far from Venice. Nearer still was the memorable episode by the little known church of Sant' Agnese, where, from the artesian well, hard by, so much gas and sand escaped that the church and houses of the neighborhood were seriously menaced with a complete collapse, and considerable damage was caused before the phenomena ceased.

During the notable earthquake that submerged the greater part of the Lido of Malamocco, in A. D. 1102, the city of Malamocco, existing at that time near the present porto, or harbor, commenced to sink slowly, leaving the inhabitants scarcely sufficient time to escape with their lives. Houses fell in ruins, flames issued from the heaving earth, when, suddenly, the sea rose and the city disappeared forever under a tidal wave. This former city was the second home of the early Doges, their first having been at Torcello.

According to Signor Previtali, of Bergamo, northern Italy is now in a period of profound telluric movements, suddenly manifested here and there, with a center of radiation, during the past year, in Monte Baldo, between the Lake of Garda and the valley of the Adige. These disturbances have shattered Salò (surrounded by picturesque terraces and lemon groves and with a beautiful bay), and have extended even to central Italy. In June, 1902, at Misano, near Caserta, an earthquake of such violence occurred that the terror-stricken population, fearing a fate like that of St. Pierre, encamped upon the open country.

Later on, in this article, we shall see what measures will be taken to mitigate and, where possible, to forestall the evil effects of natural forces that are known, or believed, to be undermining the wonderful city of the lagoons, the admiration of architects, artists, poets, and travelers. The question of immediate interest is to know what recent examination, under competent supervision, has revealed of the impairment of the greatest Venetian monuments of architecture and history, whether their lamentable condition is due to natural causes, or to man's incapacity and neglect.

(To be continued.)



Light and Lighting

MUNICIPAL LIGHTING IN CHICAGO.

The report of City Electrician Edward B. Ellicott, of Chicago, on the operations of his electric lighting plant for the past year, presents a number of interesting facts. The total cost of \$53.51 per lamp represents a reduction over the previous year's cost of \$3.97, or a total saving of \$17,896. Higher wages and prices of materials have prevented a greater saving. The average number of lamps operated was 4,508 at a gross cost of \$241,224.11. If these lights had been rented from a private concern they would have cost the city \$452,837, leaving a difference of \$283,612.98 in favor of municipal ownership. Since December, 1887, the cost of the plant for construction and operation has been \$3,400,679.65, while to have rented the same number of lights would have cost for that period, \$3,535,875.50. Thus the cost of the plants has been saved in the operation of the system, with exception of a small amount of interest to be charged against the plants for such years as the plants cost more than the rented lights would have cost. This is the largest municipal lighting plant in the country and the city has not issued any bonds nor increased its taxes for the purpose.

MODERN GAS LIGHTING.

The introduction of the incandescent mantle for gas illumination has added greatly to the profits of the gas manufacturing concerns as well as to the illuminating power and efficiency of gas. The profits from gas are now obtained from heating, cooking, and power purposes. The incandescent mantle has transformed the gas industry in many respects. Water gas yields a non-luminous flame, but with the mantle has practically the same illuminating efficiency as coal gas. If the value of gas is, therefore, to be judged by its efficiency, it appears reasonable to maintain that the purity or quality of the gas itself is quite an unimportant element in the question. Modern conditions are such that it is the way gas is used and the appliances by which it is used that counts and makes it valuable. The value of gas for illuminating purposes is now chiefly dependent upon the calorific intensity of the flame it yields, and the value of gas for heating purposes is dependent upon its calorific power.

RULES FOR GASFITTERS.

A gas company of Chicago—the People's Gas Light and Coke Company—has prepared a useful syllabus of rules for gasfitters, which are intended to have general application and, indeed, to serve where the law is indeterminate or uncertain. The rules include details of piping for all sorts of service, including gas manufactured for light and for fuel, as well as for natural gas. Specifications are also included for the equipment of boilers and furnaces for the use of natural gas as fuel.

NATURAL LIGHT FOR BASEMENTS.

It is often a difficult matter to properly light a basement room or floor when the window opens into an area faced with a dead wall. An English designer has come forward with a method of overcoming this difficulty in an exceedingly direct and ingenious manner. His proposal is nothing less than to raise the height of the window after the ceiling and floor of the upper room, breaking away the ceiling for a short space around the window top, and putting a sloping member in place which, in the room above, is enclosed within a window-seat, which may be paneled or treated otherwise in harmony with the upper apartment. The suggestion seems a very happy one, and it is interesting to note that it has been successfully carried out in some new and very high flats in London.

ACETYLENE GAS LIGHTING FOR COUNTRY HOUSES.

At one time it was thought that it would never be possible to use acetylene in ordinary gas-fittings, owing to the fact that it readily forms with copper compounds which easily explode. Experiments have shown, however, says a recent investigator, that, except with pure copper, and in circumstances which can not occur in ordinary working, such compounds are not formed, and it is now contended that the use of ordinary gas-fittings is safe. No means have been found for reducing its great explosiveness when mixed with air, on account of which its use in gas engines is impossible. On the other hand, acetylene light has very decided advantages over that from coal gas. In a room lighted by 70 candle-power, ordinary gas gives off 20 cubic feet of carbon dioxide, against only four from acetylene gas, and the economy of acetylene in country districts is considerable.

A SUMMER HOME AT RYE, N. Y.

The engravings shown on pages 92 and 93 illustrate a summer home erected for William A. Pratt, Esq., at Rye, N. Y.

The building is of Colonial character with a gambrel roof and good detail. The underpinning is built of red brick, laid up in red mortar. The building above is of wood, and the exterior is covered with clapboards on the first story and Eastern white cedar shingles on the second story. The clapboards are painted yellow, while the trimmings and dormer are painted white. The roof is covered with white cedar shingles. All shingle work is left to weather finish. Dimensions: Front, 44 ft.; side, 28 ft., with an extension 14 ft. in depth. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The main entrance opens into the living hall, with flower alcove on each side, the under part of which forms a coat closet, with window over the closet. Upon entering this hall one finds an archway, in the recess of which there is a brick mantel, and around which the stairway is encircled, and extending up through the well-hole to the roof. This fireplace is brick arched and is constructed of red pressed brick. It has a red tiled hearth and a wooden shelf, supported on corbeled brick as brackets, and finished with a neat molding extending around the mantel. The staircase is provided with a mahogany newel, posts, and rail, and enameled balusters. The inglenook is beamed. The trim in this living hall, as well as the entire house, is of white pine and is treated with white enamel paint. The walls are covered with a crimson burlap, which harmonizes effectively with the white enamel trim. The reception-room is treated in an artistic manner with a yellow and white combination. The dining-room, extending the entire depth of the house, is treated with old delft walls and white trim. The butler's pantry is fitted up complete. The kitchen is furnished with all the best modern conveniences, including a range. The laundry is provided with a Stamford laundry stove, Alberene wash trays, etc.

The second floor contains five bedrooms, linen closets, and a bathroom, the latter being fitted up with porcelain fixtures and exposed nickelplated plumbing. The third floor contains simple storage room.

A cemented cellar contains furnace room, fuel bins, etc.

The house is provided with electric fixtures of old brass, Colonial style, electric wiring and lighting, push buttons, speaking tubes, etc.

Mr. Henry C. Pelton, architect, St. James Building, 1133 Broadway, New York.

A BRICK RESIDENCE AT SPRINGFIELD, MASS.

The illustrations on page 97 show a brick house erected for Alfred Leeds, Esq., at Springfield, Mass.

The building is constructed of red-faced brick laid in white mortar, and the trimmings are of dressed Indiana limestone. The roof is covered with a red tile. Dimensions: Front, 50 ft. 10 in.; side, 69 ft., not including piazza. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The hall is a central one, and is trimmed with quartered oak. This hall is furnished with a high paneled wainscoting, a massive wooden cornice, and an ornamental staircase, with a newel post formed of a cluster of spindle balusters. The lavatory, which is conveniently placed under the landing, is wainscoted with Tennessee marble and paved with tile, and is furnished with the usual fixtures with nickelplated plumbing. The parlor is trimmed with white pine and is treated with white enamel, and has an open fireplace, furnished with white enameled tile facings and a hearth, and a mantel of Colonial style with mirror and columns. The sun-room is treated the same as the parlor. The library, or living-room, is finished in mahogany, and has bookcases built in, a wooden cornice, and an open fireplace, provided with a tiled hearth and facings and a massive mantel. The dining-room is also finished with mahogany, and has a paneled wainscoting six feet in height, a wood cornice, buffet built in, and an open fireplace, furnished with tiled facings and a hearth and a mantel with columns and mirror. The butler's pantry is provided with drawers, dressers, cupboards, and bowl complete. The kitchen is finished with hard pine, and has two pot closets, a large store-pantry, and a fireplace for the range. The laundry is also fitted up with wash-trays and two closets.

The second floor is trimmed with whitewood, treated with white enamel, and contains five bedrooms with large, well-fitted-up closets, and a lavatory in the closet of each room, store-closet, linen closet, and two bathrooms, which are furnished with porcelain fixtures and exposed nickelplated plumbing. These bathrooms have white tiled wainscoting and floors laid with unglazed tile. There are three guest rooms and also three servant rooms and bathroom on the third floor. A cemented cellar contains a steam heater, cold storage, fuel rooms, etc. Mr. G. Wood Taylor, architect, 425 Main Street, Springfield, Mass.



The Garden

SMALL FORMAL GARDENS.

An English writer points out that the more restricted the garden plot, the more obviously necessary are the methods of formal culture. No longer can the artistic taste of the ordinary suburban lady or gentleman, in the so-called purlieus of villadom, be satisfied with the indiscriminate growing of flowers and evergreens on the one hand, or with what is known as potting plants in carpet beds on the other. The untamed beauties of nature are out of the question within the confines of such a plot, and it becomes more and more a prevailing opinion that it is better, therefore, in the more immediate environment of any house, to let order and plan bring the garden into closer relation to the building to which it forms the setting. It is certain that neither house nor garden can be complete without the other. The idea is consistent and historic. The Tuscan gardens of Pliny the Younger present a remarkable similarity to the old Scottish gardens which Sir Walter Scott described at Tully Veolans. Adam was often depicted as a gardener, and through all the ages the love of the garden furnished the gay with a spot for delights, and the pensive a retreat for meditation. The reaction against the grandiose style of Le Nôtre, which William III. patronized and made the fashion in England after the ideals of Versailles, Chantilly, St. Cloud, and Meudon, produced the special mode of landscape gardening which Kent popularized in that country, and which became a British creation before "Capability" Brown vulgarized it. Repton continued on the same lines; but Nesfield the elder, and Marnock and other planners of gardens during the last century began to revert to the older and more suitable mode of garden treatment, in which the sunk fence, "ha, ha!" so admired by Horace Walpole, no longer had a place as the taste in favor of visible boundaries, where such might properly be looked for, regained favor, till now the practise is, on the whole, almost universal.

A NEW WAY OF MOVING TREES.

The Scientific American Supplement prints a translation from La Nature describing a new method for moving large trees. The vital point of the system is a new truck in which an ingenious arrangement of windlass and ropes permits, when it is desired, of inclining the tree toward the rear of the truck until it reaches a horizontal position, and of holding it in that or any other position desired; while a combination of chains supports the clod of earth in its rotary motion. The operation can be performed by one man, while six men are required with the old type of truck. This is, therefore, recommendable, as far as its operation is concerned; but, in order to be exact, we must add that the pieces of its complicated mechanism make it very heavy, and considerably increase its cost. This limits the use of it to the transplanting of trees whose removal is difficult on account of obstructions on the roads that have to be traversed. The apparatus has been devised with a view of obviating the necessity of carrying the tree in a vertical position, and of lessening the number of men usually employed in such work.

FLOWERS FOR THE CITY GARDEN.

Some advice for flowers suitable for the city garden or yard is given by a contemporary.

Sweet alyssum will grow well almost anywhere, and it will be found pleasing as a plant for edging beds. Candytuft is similar to it in habit and ought to be given a place, if room can be spared for it.

The petunia is an excellent plant for the amateur florist. It grows strongly, blooms early, profusely, and constantly until cold weather comes, and is one of the brightest and most cheerful of flowers. It will flourish under extremely unfavorable conditions. It should be sown in masses to produce the best effect.

Pansies will bloom well in the city garden provided they are not shut in so much that there is not a free circulation of air. In a close place they will not do well.

Phlox drummondii does better than almost any other plant in a weak soil. The pink and white varieties are the most satisfactory ones to grow. If the plants are grown along the fence or the side of the house give them a place in front, as they are of low growth.

For back rows, or to plant in front of the wild cucumber, to hide its naked lower branches, the zinnia will be found a very good plant. It grows to a height of about three feet, branches freely, blooms profusely, and comes in a great variety of rich, bright, cheerful colors.



FIRES IN SUMMER HOTELS.

THE summer hotel season is close at hand, and the question of fire protection in the resort hotels is one that should be considered by every prudent traveler. Fire and Water Engineering prints a valuable paper on this subject. Regarding the fire hazards of the summer hotel, points out its author, the same conditions exist as in a dwelling house, only in a more accentuated degree. The elements of danger might be divided into four classes—those occasioned by heating, lighting, cooking, and laundering. These, of course, all exist in a family residence, but in a summer hotel, accommodating 150 to 400 guests, this work, including the necessary adjuncts of the business, is carried on to such an extent that it produces a miniature city in a risk of this class, and a combination of hazards such as a laundry, bakery, lighting, heating, and power plant, a printing office, restaurant, a market, a grocery, a cold storage plant, and, in many cases, furniture repairing, upholstering and carpenter shops. If town or city block contained all these hazards under separate ownerships, it would be classed as an omnibus risk, considered from an insurance standpoint as extra hazardous, and would have a green tint on the insurance map. All these are usually included in a majority of the hotels, together with the guests' rooms under the same roof. To eliminate possible dangers from fire, the more serious hazards should be placed in detached buildings and at such a distance from the hotel proper, or of such a construction, that the burning would not endanger the main structure. Many owners of recently constructed houses have adopted this plan to a certain extent, and some of the proprietors of the older houses are removing these hazards from the building.

As to the origin of hotel fires, as far as ascertained, the larger number of known causes in this class, and costing the companies the largest amount of money, is attributable to defective chimneys, which would properly include the overheating of flues. This would suggest the wisdom of establishing a heating and lighting plant in a separate building.

The most essential feature in a summer hotel beside the attractiveness of the house and its surroundings is the provision against fire—thus affording safety to the guests and the property. One of the recently constructed hotels, which is up to date in its appointments, has a protective system which might well be imitated by others who contemplate building, also, to a certain extent, by those now operating a first-class hotel. This is a substantial frame building with first story of stone. The walls are wooden frame covered on the inside with either expanded metal or sacket wall board and hard plaster, and also on the outside with expanded metal and Portland cement. All walls are stopped off at floor levels with brick. Floors are doubled board on joists, with joist spaces topped at intervals, expanded metal and plaster finish on under side forming ceiling. Roofs are covered with asphalt roofing, excepting towers, which have metal. Stairways are shut off by swinging doors. Elevator shafts have also expanded metal and plaster with tin-covered doors and wire-glass windows in same. Corridors above the first floor are shut off by heavy plank doors, making six subdivisions. All partitions are of expanded metal and plaster. The heating, lighting, and power plant is in a detached building some distance from the main structure, and not exposing same. The laundry, printing office, and kitchen are located in separate buildings. Heated throughout by steam, except fireplace on office floor, lighted by electricity. Automatic sprinklers fed from the gravity water supply of the building are installed throughout halls and corridors above the first floor, also all stairways, elevators, and parts of basement, kitchen, laundry, and helps' quarters. The hotel and all its outlying buildings are surrounded by a system of underground eight-inch mains, feeding twenty-five hydrants, as well as serving large standpipes erected in the building proper, with five valves and hose equipment on each floor and ninety chemical extinguishers well distributed. Local fire alarm system connected to bell and annunciator in office, two boxes each floor; there is also a watchman and electric clock.

HOUSEHOLD FIRES.

THE danger from household fires is more apt to be internal than external. Fireproof construction of dwellings is not yet feasible at low cost; but care of internal fires and dangers from fire is often more effective than fireproof building.

A DWELLING AT NEW BEDFORD, MASS.

THE dwelling which is illustrated on page 100 has been erected for Dr. E. H. Abbe, at "Abbey Terrace," New Bedford, Mass.

The underpinning is constructed of rock-faced bluestone, and the building above, of wood, is covered on the exterior framework with matched sheathing, building paper, and shingles, the latter stained a light gray color. The trimmings are painted a cream white, the blinds light yellow, and the sash bottle green. The roof is covered with shingles and is stained a moss green. Dimensions: Front, 40 ft.; side, 36 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The interior is trimmed with white wood. The reception-hall is finished in Flemish oak, and contains an ornamental staircase turned out of similar wood, and a similar treatment, and is lighted with an artistic stained glass window effect, composed of one large window with a circular head, and one smaller window on either side. There is an open fireplace, built of brick, with tiled facings and hearth, and a mantel. The living-room is treated the same as the hall, and has a nook, separated by an elliptic archway, and provided with a seat extending around the same. There is also an open fireplace with tiled trimmings and mantel. The dining-room is painted with old ivory white, and has a Colonial china closet built in with leaded glass. The butler's pantry and store-pantry are fitted up with bowl, drawers, dressers, cupboards, etc. The kitchen is treated naturally, with North Carolina pine for the trim.

The second floor is treated with white enamel paint, and contains a square hall, four bedrooms, and a bathroom, furnished with a wainscoting of warm beaded stuff, with the walls and ceiling throughout painted with white enamel; it is furnished with porcelain fixtures and exposed nickelplated plumbing. The servants' quarters and storage space are located in the third story. The cellar contains a furnace, fuel rooms, laundry, and store-room. Cost, \$4,100 complete. Mr. Nat. C. Smith, architect, New Bedford, Mass.

A RESIDENCE AT WARREN, PA.

ON pages 102 and 103 will be found engravings which illustrate a residence erected for C. P. Northrop, Esq., at Warren, Pa.

The stonework is of Cleveland bluestone, laid rock-faced, broken ashlar, with cut bed and joints laid in cement. This stonework is broken off at various heights, which adds to the picturesqueness of the design and takes away the stiffness often seen in suburban work; the remainder of the building is sheathed and covered with cedar shingles, which are stained a russet brown with ivory-white trimmings. The roof is covered with shingles and is stained a dark green. The overhanging and porch ceilings are of yellow pine and are treated with spar varnish. Dimensions: Front, 38 ft.; side, 48 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 9 ft.; third, 8 ft.

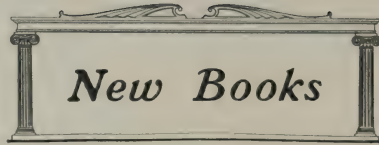
The several rooms and hall connecting, as they do, make a most attractive suite of the entire first floor. The large hall is trimmed with red oak, and has a paneled wainscoting and seat and an ornamental staircase with a broad landing, provided with windows and transoms, which are leaded and filled in with tinted glass. The parlor is trimmed with white wood and is painted with ivory-white enamel. The dining-room is trimmed with quartered sycamore. The walls are wainscoted four feet high. There is a bay window and a paneled seat. The fireplaces in hall, parlor, and dining-room are built of brick and are furnished with tiled facings, and hearths and mantels of Colonial style. The butler's pantry and kitchen are furnished with all the best improvements.

There are five bedrooms, large, well-fitted closets, linen closet, and a bathroom on the second floor. This floor is trimmed with white wood and is painted with white enamel. The bathroom is trimmed with oak, and has a paneled wainscoting five feet in height. It is furnished with porcelain fixtures and exposed nickel-plated plumbing. There are two bedrooms and a trunk room on the third floor. A cemented cellar contains a laundry, furnace, and coal bins, besides a vegetable cellar and servants' toilet. The floors of the main rooms and the hall are of hard wood, and are scraped and waxed. Mr. E. G. W. Dietrich, architect, 320 Broadway, New York.

THE MODERN WINDOW BOX.

THE window box of up to date style, says an exchange, should extend clear across the sill and must be narrow—not more than a foot wide and about as deep.

The under soil may be ordinary, but the upper earth must be had from the florist. It is always a good idea to have the florist start the window garden at his own establishment and nurse the new plants there into health in their new surroundings.



MILLIONAIRE HOUSEHOLDS.

PRINCIPLES OF HOME DECORATION. By Candace Wheeler.

New York: Doubleday, Page & Co., 1903. Pp. 227. Price, \$1.80 net.

Mrs. Wheeler has been so long a conspicuous figure in interior decoration in America, that almost everything she has to say on this subject, which she has made her own, is both welcome and entitled to respectful consideration. The present volume is a slight one in size, but it has been expanded into a presentable book by large type, good paper, and some finely printed illustrations. The latter, however, are the least important and the least valuable part of the book. Not all of the pictures are of equal merit, and some of them are distinctly out of place in a book intended to improve the popular mind in so important a subject as home decoration. The sitting-room in a house at Ontario, with plaster casts on brackets between a row of windows, illustrates about as bad a way of displaying sculpture as could be imagined.

The author protests vigorously against the untrained hand in interior decoration, and if her book did no more than emphasize this point it would accomplish a valuable and much needed work. As a matter of fact, however, most of what the author has to say on the many aspects of her subject is full of suggestion, common sense, and a cultivated artistic perceptibility. A considerable range of topics is presented, dealing both with the architectural problems of the house and with their interior decoration. The sequence of the chapters is not always well arranged, but the careful thought and the happy suggestion is apparent on every page. The book is, on the whole, a helpful one, and its purpose of adding to the good of life through the beauty of one's immediate surroundings is a most worthy one.

PRINCIPLES OF HOME DECORATION.

MILLIONAIRE HOUSEHOLDS AND THEIR DOMESTIC ECONOMY.

With hints upon fine living. By Mary Elizabeth Carter. D. Appleton & Co., New York, 1903. Pages, 303. Price, \$1.40 net.

Quite a new terror is given to existence when our serving maids and housekeepers set forth our manners of living and peculiarities of life. Whether one be a millionaire or not—and most people appear to belong to the latter class—the production of such books can not but add to the awkwardness of existence. To one not a millionaire, however, and interested in the doings of these great folk, a volume dealing with the internal management of their households will be a mine of great interest calculated to arouse the deepest curiosity. Such readers will find this book a source of much delight. It introduces one immediately to the innermost secrets of the dwellings of the great. The boudoir and the dining-room, the kitchen and the laundry, the linen room and the servants' dining-room are all pictured for the reader by one obviously familiar with every detail of these important matters. The book abounds in information, and since, as has been pointed out, only the minority are millionaires, it contains hordes of facts with which most people are unfamiliar. If it is useful to know unfamiliar things this, clearly, is one of the most useful publications that has recently come from the press.

The point of view of the author is that of the servant, the head servant, the immediate employer of other servants; but she only takes us above stairs in the capacity of a servant. Her sympathy with this sorely burdened class is unmistakable; and, wherever possible, she speaks a word for its well being. This is commendable, of course, but the especial hardships of this pampered class in the households whereof the book is concerned are not particularly observant. The book describes in detail the duties of the superintending housekeeper, the lady's maid, the house maid, the parlor maid, the butler and his staff, the useful man, the valet, and other servants of the great; and those desirous of knowing just what these persons are expected to do and how they ought to do it, will find all these matters duly set forth in this volume. Great social functions, and much of the personal life of the rich lady, are treated at some length. The book is not unentertaining, and is well written. It will interest those who are interested in the private life of the rich, and it will doubtless serve as a useful guide to those who may suddenly become possessed of great wealth and have been without any practical experience as to its enjoyment. The volume concludes with some miscellaneous receipts guaranteed to have been "thoroughly tested."

Legal Notes

ALTERATION OF CONTRACT.

A CLAUSE in a building contract, providing that "no alterations may be made in the work . . . except on a written order of the architect," did not require the parties to obtain such an order where the change was not in the work, but merely in the parties doing the work. *Drumheller et al. vs. American Surety Co. of New York et al.*, 71 Pac. Rep. (Wash.) 25.

ASSIGNEE OF CONTRACTOR.

THE assignee of a building contractor's claim for installments due under his contract has a prior claim on the funds retained by the owner, as against mechanics' lien filed subsequent to the assignment. *Hall vs. City of New York et al.*, 79 N. Y. Supp. 979.

BUILDING CONTRACT.

WHERE it had been previously agreed that an old building should be taken by the contractor for a new one at \$100, and that sum was deducted from the contract price of the new building, the fact that such antecedent agreement was not made a part of the building contract, which specified the price as the amount remaining after deducting the \$100, did not invalidate the contract. *California Iron Construction Co. et al. vs. Bradbury*, 71 Pac. Rep. (Cal.) 346.

FELLOW SERVANTS.

MEN in charge of a derrick on the roof of a building in course of construction, and a mason's helper and general laborer, are fellow servants, all being employed and paid by the same master, at work together for him at the same time and place, and on the same gable wall, in furtherance of the same common object, and under the same superintendent and foreman employed by the master. *McQueeney vs. Norcross et al.*, 53 At. Rep. (Conn.) 780.

FIXTURES.

REV. ST. 1898, § 3314, provides that any person who furnishes materials "for or in or about the erection, construction, repair, production, or removal" of any building shall have a lien therefor; and § 3315 gives such lien to a subcontractor. *Held*, That shelving placed, on the owner's order, so as to conform to the inside contour of a store building, and nailed to the walls and floors so as to make it stationary and permanent, was sufficiently annexed and adapted to the use of the building to constitute a fixture, and, having been attached with that intent, to support the lien of a subcontractor for the materials furnished therefor. Tables placed in the store building for use in the prosecution of the business there carried on, but not attached to the building, did not become fixtures, so as to support a lien. *Rinzel vs. Stumpf et al.*, 93 N. W. Rep. (Wis.) 36.

INDEPENDENT CONTRACTOR—LIABILITY OF OWNER.

PLAINTIFF's husband was killed by being knocked off a temporary scaffold by a moving elevator in a shaft where he was doing carpenter work upon a building. He was in the employ of an independent contractor, but the agent for the owner of the building, for whose use the work was done, had directed the manner and mode in which the particular work should be performed. *Held*, That the owner of the building was bound to exercise reasonable care to prevent such a movement of the elevator under his control as caused the death of plaintiff's husband. *Appel vs. Eaton & Prince Co. et al.*, 71 S. W. Rep. (Mo.) 741.

LIQUIDATED DAMAGES—SUBMISSION TO ARCHITECT.

A CLAUSE in a building contract provided for liquidated damages to the amount of \$10 per day for each day's delay in completion. Another clause provided that no alterations could be made except on a written order of the architect, and when so made the value of the work was to be computed by the architect, and the amount added to or deducted from the contract price. "In the case of dissent by either party, the valuation of the work shall be referred to arbitrators." Another clause recited that, if the contractors should delay the progress of the work so as to cause any damage, the amount of such damage should be fixed and determined by the architect or by arbitration. *Held*, Not to require the submission to the architect or arbitrators of the damages caused by failure of the contractors to complete the building within the time limited. *Drumheller et al. vs. American Surety Co. of New York et al.*, 71 Pac. Rep. (Wash.) 25.

MEMORIAL CHAPEL OF THE STANFORD UNIVERSITY.

THE Memorial Chapel of the Leland Stanford Jr. University, Palo Alto, Cal., illustrated on page 101, is, with the exception of a few minor details, complete, and the splendid climax to the noblest group of buildings possessed by any institution of learning in the world. The entire fortune of the late Senator Stanford, estimated at \$40,000,000, is eventually to be devoted to the endowment of the University, which he and his surviving wife founded as a memorial to an only son.

The chapel stands within the quadrangle of the University, and is surrounded by the institutional buildings. At present the contemplated plan of these adjuncts is complete, but as the work matures and more accommodations are required other structures will arise equally harmonious in design and quite as substantial in construction as those now built.

The new chapel is designed as a memorial of the founders of the University, and nothing has been neglected that art might suggest or lavish expenditure provide that could add to its beauty or secure its architectural symmetry and proportion.

The material employed is a buff sandstone, of which all the other buildings of the University are constructed. The exterior is rough hewed, though elaborately carved in places, but the interior is carefully surfaced. The stone is fine grain and well adapted for the fine effects of the carving with which the interior has been lavishly adorned.

The style generally is Romanesque, with more than a suggestion of Spanish renaissance introduced with happy effect.

The grand entrance through the west front is by three arch doorways, with oaken panels finely carved. The arches are elaborately sculptured, and in the face of the chapel is a grand work in mosaic.

The tower with spire springs to a height of one hundred and sixty feet above the pavement, and contains a clock with four illuminated faces and a chime of bells. It is twelve sided. Flying buttresses spring below the tower on each front, and the four corners are flanked by as many turrets rising from the angles between the gables. The main vestibule has marble floors with oaken ceiling. Each of the naves has separate entrances.

The interior is cruciform and imposing in its vast height and magnificent proportions. At the intersection of nave and transept are the four great pillars, with capital and bases richly carved, each fifty-two feet high, which support the dome. The sweep of the wide arches adds greatly to the general effect. The vaulted ceiling is of wood supported by rods of burnished copper.

Wherever the eye lights there is seen a wealth of foliated carving, every detail being carefully executed.

The galleries of the nave are supported by steel work, with balustrades of carved stone.

Forty-seven richly stained glass windows illuminate the interior with subdued light and a wealth of color. Tisnot and the paintings of other great artists are reproduced in the windows, which are American in everything but design.

The crowning splendor of the chapel is in the chancel. It is raised by three steps above the main floor and separated by a massively carved marble balustrade. The pavement of the sanctuary is of mosaic. The altar of white Carrara marble is a work of art. The front is a bas relief of the "Entombment," after Rubens' famous picture. Above it is a large copy in mosaic of the "Last Supper," by Cosimo Rosselli, a fifteenth century artist, from the original in the Sistine Chapel.

Extending around the entire apse, just above the altar and on a line with the windows, are figures of the prophets in mosaic, the rich color of the figures being effectively brought out by a background of burnished gold.

The inner circumference of the chancel contains twelve niches sheltering statues of the Apostles of heroic size, executed in Italy. They are massive and beautiful figures. The figure of the Christ stands above the altar.

The chapel has cost thus far half a million of dollars. Its seating capacity is about 1,600.

THE architect's part in modern life is of the utmost importance, and yet the chief idea of many architects is the simple one of obtaining commissions. As a matter of fact this process is itself often complicated and the job landed after many embarrassing campaigns. Architects, as a rule, do not appear to rise to the full responsibility of their position in the economy of life. They must, it seems, live; and in order to live they must obtain commissions. But their activities touch on so many points, their mere general helpfulness would, in many cases lead to profitable engagements, that the widest scope should be given to their interests.

Roads

OILING ROADS.

THE use of petroleum to lay the dust and consolidate roads was first tried at Baku, the source of supply of the Russian kerosene. Baku is situated on an arid tract of land in the Apcheron Peninsula, upon the shores of the Caspian Sea, and was until recently without any proper water-supply, as there is no river in its immediate neighborhood. The Caspian is much saltier than the ocean, and when its water was used for street watering there was too great a deposit of salt in the streets. Fresh water was too expensive for the purpose, as the potable supply had to be brought in carts, from some distance, and although there were some two hundred miles of petroleum pipes in the town and neighborhood there were no water pipes. Crude petroleum at the period in question was worth two or three annas per ton, but it was too dangerous a liquid for street watering, as it contained volatile constituents that would ignite readily; it had also a strong and disagreeable smell. The liquid used was *asatki*, or the residue of the stills, which was also used as fuel in boilers. This residue is a thickish, dark colored oil, having a very faint smell; its value at the time of the experiment was about fifty cents per ton, and it was applied to a road whose surface was of coarse sand which it tended to consolidate. This road ran along by the harbor, and did not appear to be of a nature to bear sweeping; the oil effectually laid the dust, and is said to have effectually resisted the rain of the winter season.

ROADS IN MASSACHUSETTS.

THE work accomplished by the Massachusetts Highway Commission since its organization in 1894 has, if not transformed the roads of that Commonwealth, so improved them as to have made the State almost the paradise of the automobilist. The new roads are so admirably constructed that they hold good almost indefinitely, and are always ready to be lengthened as opportunity offers. Districts that are most in need of road improvements are attended to first. Roads in Massachusetts are repaired, improved, and constructed both by State and local authorities, the former aiding and cooperating with the latter and not duplicating its work.

STONE PAVEMENTS.

AMONG the requisites for a first-class stone pavement carrying a heavy traffic, says Mr. E. A. Fisher, C.E., in a recent article printed in the *Municipal Journal and Engineer*, may be mentioned the following:

1. It must be economical, not only as regards its first cost but also as to its maintenance.
2. It must be durable.
3. It must not wear so smooth as to become slippery and unsafe for horses, and at the same time must afford the minimum of traction.
4. The general surface should be constructed and maintained in such condition that water will not remain on any part of the pavement.
5. The joints should be close, and the general surface smooth, to reduce the noise to a minimum.

The foundation is of the first importance in any pavement, and should receive the same care and attention as any other engineering work. This care should begin with the formation of the sub-grade.

CONSTRUCTING MACADAM PAVEMENTS.

A RECENT writer describes some of the latest improvements in the method of constructing macadam roads which have both increased their efficiency and diminished their cost. When the road bed is ready to receive the stone covering, he remarks, the spreading wagons are coupled to the roller, forming a train of three or four wagons, drawing from ten to fifteen cubic yards (fifteen to twenty tons) of stone and hauled under the elevator chutes, where the wagons are loaded by gravity, the stone sliding into them directly from the crusher bins. After the train is loaded it is drawn to the road, or street, with the roller, where the stone is spread automatically, four and one-half feet wide and to any desired depth without any hand labor after leaving the crusher. The wagons are provided with broad wheels, the front wheels being six inches wide and the rear wheels ten inches wide, so that both the roller and the wagons continually improve the road over which the stone is hauled, making it possible to haul larger loads as the work progresses. This fact also makes it possible to begin the pavement at the end nearest the stone supply, extending outward with the completed work, just the opposite of what is commonly specified.



WATER FOR COUNTRY HOUSES.

THE quantity of water, from whatever source it may be obtained, which should be allowed for each person in a private residence, says the Ironmonger, is 25 gallons per day. In many places streams or wells can not be relied on to any extent, and the whole or chief supply is the rain water, which is collected in underground or overground tanks. Most country residences in proportion to the number of inmates have a roof area capable of yielding all the water that is required. With a slated roof the least impurities are collected, tiled roofs being doubtful unless they are new or kept free from moss or dirt. It is desirable that storage tanks equal in capacity to one-fourth of a year's supply should be provided, to allow for variable or limited rainfall.

The quantity of rain that can be collected from a roof of a known area can be roughly calculated by allowing 2 cubic feet (6¼ gallons to the foot) per square yard of roof for each average three months of the year. Or the rainfall may be calculated, and it is fairly safe in most places to allow for a 25-inch fall per annum. The whole of the rainfall can not be collected, however, and, in practice, it ought to be reduced by one-half to find the amount that may be expected to find its way to the storage tanks.

To calculate a roof supply measure the flat plan of the roof, allowing nothing for the slope of the roofs. One inch height of water spread over 12 square inches represents a fraction over ½ gallon—it may be called ½ gallon—and allowing this quantity per square foot for each inch of rainfall, the total amount is arrived at. For example, with a roof of, say, 3000 square feet, receiving a 25-inch fall per annum, $3000 \times 25 = 75,000$ ½ gallons, or 37,500 gallons, are obtained. Deduct one-half, and the remainder is what should go to storage.

"Separators" are devices which receive roof water from the gutters, and, after allowing some of the water to run to waste, they automatically divert the remainder to the storage tanks.

Rain water storage tanks are usually situated underground, where they can best be kept cool, and the water best preserved. They should be built of brick and be well puddled with clay underneath and around the outside, and well troweled in cement inside. The tank must be water tight. It is desirable that an overflow be arranged to prevent it becoming flooded. Care must be exercised in dealing with the overflow, which should be carefully trapped and disconnected, and the tank must be provided with air inlet and outlet. The capacity of the tank is determined by calculating the cubic feet it contains and multiplying the result by 6¼ gallons.

For stables and laundry work a separate tank is sometimes provided, this being filled by rain falling on the hard, clean surfaces of the yards where they are not fouled by horses. In large houses the total supply should be stored in two or more tanks, so that one may be opened and cleaned while the other or others are working. Accessible lids should be provided. Water from these tanks is raised to the cistern or other points by the ordinary types of pumps.

Water from a lake or pond should be filtered, and certain steps should be taken to prevent its being polluted. Surface water should only be allowed to pass to the pond from off clean ground or herbage.

If the pond or lake water is kept as clean as possible, sand filtration will be found to make it fit for the storage tank. This can be effected anywhere between the pond and tank, but preferably near the pond, to prevent that end of the pipe becoming choked with leaves, debris, or an occasional fish or frog. The pipe leading from the pond should be fitted with a strainer to keep back foreign matter as far as possible. It is sometimes more convenient to have the filter at some distance from the pond, for, when near, the filter must be below ground level; but if the pond happens to be well above the level of the storage tank, it is possible to have the filter on or above the ground.

A sand filter is easily made. In a modern instance the top layer of the bed consists of fine washed sand, 2 feet 6 inches thick; this rests on 3 inches of pea gravel, and below layers follow in this order—3 inches of ½-inch gravel, 4 inches of 1-inch gravel, and 9 inches of rough stones. These layers must be washed, and the 9-inch work forms the bottom layer of all. At the bottom of the bed there should be a perforated pipe by which the filtered water passes away to the storage. For small filters an open end pipe will serve every purpose. The water should be allowed to flow onto the top of the sand and soak through, and the purpose of the different grades of gravel beneath the sand is

merely to form a support for the sand and prevent it being washed into the delivery pipe. The space where the water first enters is not always provided, but it is desirable, as it serves as a settling tank for heavy impurities held in suspension, and it prevents the water washing roughly onto the surface of the sand and disturbing it. The level of the water in the filter should be the same as that in the pond, and the water passes by gravity to the storage tank and has the same level there. When all are on a level the movement of water through the filter is very quiet and the filtering most effective.

A filter constructed in the manner described, and with the depth of sand stated, will pass 350 gallons of water per square yard each 24 hours. The cleansing of the filter will depend on the purity or otherwise of the water. It is probable that cleansing would be required once a month, and to do this it is only necessary to scrape off from one-half to three-quarters of an inch of the top surface of the sand, wash it, and replace it. To effect this the valves in the feed pipe and the supply pipe must be closed and the water baled out until it is a few inches below the sand level. The whole of the bed should be taken out and cleaned about once a year. Filter beds may be open at top provided they are under some sort of hut or shelter and protected from frost. Frost in the filter may injure its walls and would impair the water supply.

A HOUSE AT SPRINGFIELD, MASS.

THE house illustrated on page 98 has been recently erected for Edwin J. Parlett, Esq., at Springfield, Mass.

The underpinning is constructed of red brick laid in white mortar. The superstructure, of wood, is covered on the exterior framework with matched sheathing, good building paper, and then shingles; the latter stained a soft gray color, while the trimmings are painted white. The roof is covered with shingles and stained a moss green. Dimensions: Front, 50 ft.; side, 28 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The interior is treated in a simple manner, and is trimmed with white pine and painted with white enamel. The hall is provided with an ornamental staircase of Colonial style, with spindle balusters and newels, treated with white enamel paint, and a mahogany rail. The toilet and coat closet are conveniently located and are well fitted up. The living-room is provided with bookcases built in, and an open fireplace built of red molded brick; the mantel is of the same. The dining-room is treated in an artistic manner, and has a buffet built in, with leaded glass doors. At one end of the room is a cluster of leaded glass windows, under which there is a flower shelf; the space beneath the shelf is provided with a locker. The butler's pantry is fitted up with drawers, shelves, cupboards, and closets. Much attention has been given to the pantry, kitchen, and storeroom, for little woodwork is used and all the shelving is set away from the walls to permit of free dusting. The walls are wainscoted five feet up from the floor with white cement and painted.

The second floor contains three bedrooms, large closets, a well-fitted linen closet, and a bathroom, the latter wainscoted and furnished with porcelain fixtures and exposed nickel-plated plumbing. There are two rooms and trunk room on the third floor. A cemented cellar contains a furnace, laundry, and fuel rooms. Mr. Edwin J. Parlett, architect, Carr Building, Springfield, Mass.

TWO BAY WINDOWS.

BAY windows as an architectural device—a feature to be used for ornament as well as for use—is one of the most available adjuncts that the architect has at hand for ready use. They must, indeed, have reason for their employment; but when rightly used they seldom fail to give charm to interiors or relief to exteriors.

Two very different types of bay windows are shown in the illustrations on page 99. In one, from the residence of Dean Alvord, Esq., Prospect Park South, Brooklyn, N. Y., Mr. J. J. Petit, architect, the simple bay window of the lower story becomes a loggia in the upper, to which is prefixed a balcony—an ingenious idea, which illustrates the many ways in which bay windows may be employed.

Widely different is the other example, photographed from the residence of J. W. Combs, Esq., South Orange, N. J., Mr. John T. Baker, architect. This is an extremely simple structure intended for flowers. The decorated bracket on which it is supported serves also as its chief ornamental feature.

SIMPLICITY IN TREATMENT.

THE simple system is invariably the best. The smallest thing well done is better than the most elaborate attempt that fails of realization. Simplicity is always safer and better considered than ambitious efforts.



LEATHER DECORATIONS.

AN upholstery leather house, says the Tribune, is fitting up several rooms in a new and beautiful mansion after the most fascinating fashion. The dining-room walls are to be covered completely with leather of a deep, rich but dull red, illuminated with gleams of bronze. The leather is applied in squares fastened with large dull bronze headed tacks. The frieze is a stamped leather, somewhat more highly illuminated than the lower part, and slightly brighter in tone. The overmantel is a large bordered panel of the same heavily grained leather used for the walls, with the family coat of arms carved in the middle, with immensely decorative effect.

The dining-room furniture is to be of Spanish walnut, upholstered with a deep reddish brown leather, with the coat of arms on back and seat. For the library the prevailing color tone will be dim forest green, applied, in practically the same way as in the dining-room, wherever the wall is exposed above the long, low bookcases that extend around the room.

In the hall the walls are to be covered with stamped leather of warm autumn brown, with reddish lights. The frieze is in a higher tone of brown, with a mingling of yellow, and is stamped variant of the starlike design on the lower wall.

DINING-ROOM FURNISHINGS.

AN Easter bride of 1902, says the New York Sun, is responsible for a pretty fad that is turning the heads and revolutionizing the dining-rooms of certain other young housewives. The young woman who originated the idea had a dining-room, the walls of which were hung with old blues. The furniture was of the Flemish oak Mission kind. This severe, cold combination suggested to her the need of sunny tones for her table, and copper, with its warm glints and gleams, was the natural selection. The first step was the choice of a breakfast set, comprising coffee pot, sugar bowl, and creamer. Next were added copper covers for the cereal and griddle cake dishes. The final touch was given by cups and saucers of the coppery luster were picked up in an antique store. With a center piece of yellow flowers, such as jonquils, daffodils or nasturtiums, in a quaint Russian copper bowl, it is needless to say that the effect is all that could be wanted. The rose copper is particularly attractive for this use. But women who buy it should see to it that their dining-room walls are hung with cold tones, such as greens or blues, rather than with warm colors, like Pompeian red, buff, or other warm colors, the high lights of the rose copper being too pink for such combinations.

A JAPANESE SCHEME.

ANOTHER dining-room scheme, also originated by a young wife, says the same brilliant authority, is in cold tones. It began with the possession of a number of lovely old Japanese banners exquisitely embroidered on silk and a choice set of china in a solid color of pale gray-green. The banners were framed without glass in black, and the Japanese combination of black, light green and silver set the chatelaine to thinking. Finally, she took the wall paper man into her confidence, and he matched the china with paper. The table linens used in this room are always white, and all metal but silver is carefully avoided.

A SIMPLE DINING-ROOM.

A SIMPLER device, continues our contemporary, is employed by another housewife to obtain the effect desired at different times. Her dining-room is a big square room with a huge fireplace on one side, a broad English window on another, a swinging couch across one corner, and a door at the end opening into a long, straight path bordered with old-fashioned flowers. The path was planned by her grandmother more than half a century ago. On stormy days this charming apartment is lighted by sunny tones from yellow silk pillows in the window seat and couch and by vases of yellow flowers or autumn foliage on the sill and in the center of the table. Gold banded china is always used on such occasions, and center pieces marked or lined with yellow. If a hot summer day, luncheon is served, pillows covered with greens, blues, and wood browns take the place of those of sunny colors. On winter evenings there are sure to be the warm glints of red and orange.



BRICK, STONE AND TILE.

BUILDING BLOCK. L. P. Normandin, Jackson, Mich. March 3	721,825
JOINING METALLIC ROOFING TILES. E. L. Quinn, Los Angeles, Cal. March 3	721,967
HOLLOW TILE OR BRICK. O. C. Pixley, Chicago, Ill. March 10	722,249
TILE FLOORING. C. Christie, Freedom, N. Y. March 10	722,520
ROOFING TILE. H. B. Skeele, Savannah, Ga. March 17	722,918
TILE COVERING FOR FLOORS, WALLS, ETC. J. K. Slierer, New York, N. Y. March 17	723,085
MAKING CEMENTITIOUS PRODUCTS OR ARTIFICIAL STONE. W. E. Jacques, Grand Rapids, Mich. March 24	723,281

CARPENTRY.

ADJUSTABLE WINDOW FRAME. E. T. Pangburn, Battle Creek, Mich. March 3	722,037
WEATHER STRIP. L. A. Bartel, Sidney, Ohio. March 10	722,352
WINDOW. F. Neugebauer, E. L. Windom, Minn. March 17	723,029
WINDOW. W. Schaar, Berlin, Germany. March 17	723,085
WINDOW. F. O. Hullmark, New York, N. Y. March 24	723,530
WEATHER STRIP. R. H. Whitted, Crawfordsville, Ind. March 31	724,067

CONSTRUCTION.

CONSTRUCTION OF BUILDINGS. J. Roemer, Santa Maria, Cal. March 3	721,747
BRICK CONSTRUCTION. E. D. Scott, Greenville, Ohio. March 3	721,751
CONCRETE ARCH. C. R. Waite, Hoboken, N. J. March 10	721,982
WALL. J. G. F. Lund, Christiania, Norway. March 17	722,237
REVOLVING METALLIC WINDOW. P. O. Hultmark, New York, N. Y. March 10	722,305
METALLIC REVOLVING WINDOW. L. Christenson, New York, N. Y. March 17	722,675
CHIMNEY BLOCK. H. N. Jasper, Akron, Ohio. March 17	722,712
CONSTRUCTION OF BUILDINGS. J. G. Meyers, Washington, D. C. March 17	723,175
COMBINATION BUILDING. L. B. Valk, Los Angeles, Cal. March 24	723,483
METALLIC WINDOW FRAME AND GLASS. F. Potter, Cambridge, Mass. March 31	724,135
METAL WINDOW. H. C. Smith, Cambridge, Mass. March 31	724,139
EXTENSIBLE CENTERING SUPPORT. G. B. Waite, Hoboken, N. J. March 31	724,146
PORTABLE HOUSE. J. D. Kohn, Philadelphia, Wash. March 31	724,408

ELEVATORS.

ELEVATOR SAFETY DEVICE. W. N. Martin, Cripple Creek, Colo. March 3	721,816
ELEVATOR. W. L. Holman, San Francisco, Cal. March 10	722,364
DEVICE FOR OPERATING ELEVATOR GATES. C. W. Kirsh, Chicago, Ill. March 10	722,590
SAFETY DEVICE FOR ELEVATORS. A. H. Meach, Chatham, N. Y. March 17	722,736
SAFETY DEVICE FOR ELEVATORS. F. D. H. Jones, London, N. J. March 17	722,893
ELEVATOR DOOR. E. McClure, Chicago, Ill. March 17	723,708
ELEVATOR DOOR. H. Bitner, Berwyn, Ill. March 31	723,813
ELEVATOR GATE OPERATING MECHANISM. J. E. W. Fogal, Chicago, Ill. March 31	724,385

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIREPROOF PARTITION. H. Maring, Darien, Conn. March 3	721,962
FIREPROOF CONSTRUCTION. G. A. Schillinger, Chicago, Ill. March 10	722,460

HARDWARE.

HINGE. W. A. Perry, Lancaster, Ky. March 3	721,738
COMBINED DOOR KNOB AND BEEL. W. E. Farrell, Jr., New York, N. Y. March 3	721,945
SASH LOCK. O. Wall, New Plymouth, N. Z. March 3	721,983
SASH FASTENER. F. X. St. Louis, Colusa, Colo. March 3	722,162
LOCK. E. Hoy, New York, N. Y. March 10	722,406
WINDOW SASH ATTACHMENT. P. Mayotte, Escanaba, Mich. March 10	722,626
LOCKS. B. Phelps, Seattle, Wash. March 10	722,620
DETACHABLE HINGE. G. B. Pickup, New Britain, Conn. March 17	722,621
SASH LOCK AND LIFT. W. C. Riley, St. Louis, Mo. March 17	722,622
SASH FASTENER. H. Fay, Boston, Mass. March 17	722,754
DOOR LATCH AND HOLDER. E. P. Bond, Chicago, Ill. March 17	722,993
SASH PULLEY. F. Dorsch, Yonkers, N. Y. March 24	723,219
COMBINED LOCK AND LATCH. J. P. Bond, South Bend, Ind. March 24	723,252
DOOR CLOSER AND CHECK. J. Bardsley, Montclair, N. J. March 31	723,376
SASH LOCK. E. H. Dimock, Dorchester, Mass. March 31	723,808
SASH FASTENER. B. K. Brown, Northbridge, Mass. March 31	724,843

HEATING AND VENTILATION.

VENTILATOR. W. Edwards, Milford, England. March 3	721,683
SELF-ACTING AIR INLET. V. G. Paul, Brooklyn, N. Y. March 3	721,853

MISCELLANEOUS.

METHOD OF MOVING HEAVY BUILDINGS OR OTHER STRUCTURES. H. Sheeler, Cleveland, Ohio. March 10	722,256
FLOOR PLATE FOR STEAM OR WATER PIPES. A. R. Wells, Southington, Conn. March 10	722,338
ADJUSTABLE SAFETY LATCH. J. P. Bond, Chicago, Ill. March 10	722,498
METHOD OF PROTECTING SURFACES. W. H. Grow, Winchester, Kan. March 17	722,836
WALL PLASTER. W. H. Orr, Lima, Ohio. March 17	723,015
SHINGLE CARRIER. A. O. Bartlett, Paulina, Iowa. March 24	723,220

PLUMBING.

WATER CLOSET BOWL. J. J. Donovan, Peekskill, N. Y. March 3	721,786
FLUSH VALVE FOR WATER CLOSET. M. Hogan, Hartford, Conn. March 3	722,106
FAUCET FOR WASHBASINS. L. A. Grotewohl, Burlington, Iowa. March 17	722,815
WATER CLOSET. H. Knapp, Dubuque, Iowa. March 24	723,632
CLOSET SEAT. J. Hansen, Chicago, Ill. March 31	724,181
ATTACHMENT TO WATER CLOSET FLUSHING TANKS. J. J. Dockwell, New York, N. Y. March 31	724,209

TOOLS.

FLOORING CLAMP. W. H. Early, Hays, Kan. March 3	721,681
COMBINATION LEVER AND RIVET. J. V. Plummer, New York, N. Y. March 3	721,694
PLANE. J. Allen, Kennebunk Port, Me. March 3	721,771
MACHINE FOR PLANING LUMBER. Stephens & Goodale, Pasadena, Cal. March 3	721,922

A COTTAGE AT MAPLEWOOD, N. J.

The illustrations shown on page 94 present a cottage recently completed at Maplewood, N. J.

The foundations are of stone and the underpinning of brick. The superstructure is of wood and the exterior framework is covered with matched sheathing, building paper, and shingles. This shinglework is left to weather finish naturally, and the trimmings are painted ivory white. The roof is covered with shingles and treated similar. Dimensions: Front, 34 ft.; side, 30 ft., exclusive of porches. Height of ceilings: Cellar 7 ft.; first story, 8 ft. 6 in.; second, 8 ft.

The interior is trimmed with white pine and is treated with white paint. The reception-hall is provided with a broad doorway with latticed windows on either side, and an ornamental stairway, which is painted white and is finished with a mahogany rail. The living-room is provided with a circular bay-window which is glazed with leaded glass and provided with a paneled seat and an open fireplace, fitted with a tiled hearth and facings and a mantel of Colonial style. The dining-room is provided with a paneled seat, over which is a cluster of leaded glass windows, a china cabinet with leaded glass doors, and an open fireplace built of Roman brick, with the facings and a hearth of the same, and a mantel of Colonial style. The butler's pantry and kitchen are trimmed with North Carolina pine, finished natural, and are furnished with all the best modern conveniences.

The second floor contains four bedrooms and a bathroom, the latter furnished with porcelain fixtures and exposed nickelplated plumbing. The attic provides ample storage room. The cellar, cemented, contains furnace, laundry, and fuel rooms. Cost, \$2,800 complete. Mr. Joy Wheeler Dow, architect, Wyoming, N. J.

A STUCCO HOUSE AT LAWRENCE PARK, BRONXVILLE, N. Y.

The illustration shown on page 96 is that of a house built for George Olney, Esq., at Lawrence Park, Bronxville, N. Y.

The house is constructed with an underpinning of rock-faced stone laid up at random, while the superstructure is of stucco left with its soft gray color. The trimmings are painted a dark bottle green. The roof is covered with shingles, and is stained a Venetian red. Dimensions: Front, 66 ft.; side, 38 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.

The interior throughout is trimmed with white pine, and is treated with old ivory-white paint. The central hall has a paneled wainscoting, an ornamental Colonial staircase, treated with white paint and finished with a mahogany rail. This staircase is lighted by a window glazed with delicate tinted glass with good effect. There are two paneled seats in the hall and a coat closet. The living-room is fitted with bookcases built in, and an open fireplace furnished with facings and hearth of red pressed brick, and a mantel of Colonial style. The conservatory attached to this room is an attractive feature. The dining-room, octagon in shape, is provided with a china closet fitted with glass doors, and an open fireplace, furnished with facings, a hearth of Roman brick, and a mantel of Colonial style. The butler's pantry, kitchen, and servants' hall are trimmed with North Carolina pine, finished with hard oil finish. Each are fitted with the best modern conveniences.

The second floor contains four bedrooms, closets, linen closet, and a bathroom, besides two servants' rooms, with private stairway to kitchen. The bathroom is furnished with porcelain fixtures and exposed nickelplated plumbing. The cemented cellar contains a furnace, laundry, and fuel room. Mr. William A. Bates, architect, 100 Broadway, New York, N. Y.

DAMAGE FROM WATER HEATERS.

The explosion of water heating apparatus in one or two cases suggests the possibility of danger from this source. It seems probable, however, that the harm arose from improper construction and connections rather than from faults inherent in the apparatus itself. Any stoppage in the circulation when excessive firing was necessary, is liable to cause the generation of considerable pressure, due to the expansion of the water when heated. If the boiler was filled with cold water and fired without the valves being opened, remarks a contemporary in discussing the matter, the expansion of the water would be sufficient to wreck any boiler or piping connected with it. Water under such conditions is heated to a high temperature, and would immediately expand into steam on the rupture of the apparatus and fill the apartment, giving the impression to laymen that the disaster was due to the excessive steam pressure. Too much care can not be taken with the designing and the installation of these modern conveniences, which are now so universally in demand, in apartment house buildings occupied by a number of families, where any explosion that is of sufficient force to drive the parts through the floors of the building might lead to the death of the occupants.

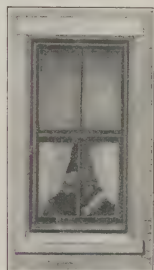
A LIBRARY AT LLEWELLYN PARK, ORANGE, N. J.

The illustration on page 89 reproduces a portion of the library in the residence at Llewellyn Park, Orange, N. J., to which the terraced garden, described and illustrated elsewhere in this number, is attached. The house is an old one, but the wing containing the library was rebuilt by Mr. Charles A. Rich, the architect, and is a modern room of fine proportions, decorated in a subdued fashion in green leather and richly furnished in a suitable manner. An old English carved wood mantel is the most striking equipment of the room, which contains many interesting works of art and historical relics. On one of the cases is an original bust of Franklin by Houdon, recently brought from Paris by the owner. Close beside it, on the wall, hangs a unique porcelain tea tray, of English manufacture, with a representation of the signing of the Declaration of Independence after Trumbull, but which differs in several particulars from his well known picture of the subject, and taken, no doubt, from an unknown or destroyed original.



FIREPROOF METAL WIRE-GLASS WINDOWS.

By means of fireproof automatic closing windows, walls may be filled with light and air openings without materially affecting their efficiency as a fire stop. It is practically impossible for fire to enter a brick building if there are no window openings, but it can and does enter easily through ordinary wood frame common glass windows; therefore, if windows can be made as fireproof as the wall, the building is safe. The Smith-Warren Company, with offices at No. 253 Broadway, New York, and No. 93 Federal Street, Boston, Mass., maker of automatic closing fireproof metal window frames and sashes, by its "Smith" system of metal wire-glass windows, will prevent the entrance of fire as long as the wall stands in which they are placed, and if left open, they automatically close themselves, upon the approach of fire at 155 degrees of heat, before the flames reach them. A brick wall containing these windows is practically as impervious to fire as if it were built solid, and the building is lighter than common glass can make it. The cost is reasonable, and the windows are equal in appearance to the best woodwork, and are made in any type or design that can be produced in wood. They are used in hotel, apartment, and office buildings, as well as in stores, warehouses, and factories, and are not only fireproof, but are also water, wind, and dust proof and non-rattling. The "Smith System" of fireproof windows comprises hollow metal frames and sashes of sheet steel or copper, cast iron or bronze, glazed with fireproof glass, and all the wearing parts are reinforced with copper, brass, or steel. All movable sashes, whether sliding or swinging, close at the degrees of heat mentioned above, and are absolutely weather tight. The company makes an exclusive specialty of the manufacture of fireproof windows, and has well-equipped plants in each of the eleven cities where its factories are established in the United States and Canada. A few of these specialties are: An automatic, closing double hung window, made with circular head and as many lights as required; an automatic, closing window with combination sliding and revolving sashes, a type in which the sashes can be revolved for cleaning from the inside of the building; and an automatic, closing window with pivoted sashes, the sashes made the full size of the frame or hinged in any manner desired. The "Smith System" meets and exceeds all the requirements of the National Board of Fire Underwriters, and is accepted in lieu of fire shutters when glazed with wire glass. To still further show the efficacy of wire-glass windows, we call attention to the experience of Thomas Roberts & Co., of No. 116 South Front Street, Philadelphia, who state that in 1901 they erected a six-story warehouse, adjoining the above address. This new building, as also part of the old, abutted on both sides, on a ten-foot wide alley, on which were wool and yarn warehouses. In order to obtain a reduction in the high rate of insurance, this firm installed in both the new and old warehouses wire-glass windows, set in metal frames, in all win-



TRIPLE HUNG WINDOW.

dows opening on both the alleys. In 1902 a fire occurred in the wool and cotton warehouse of James F. Mitchell & Co., No. 120 Chestnut Street. This one extends back to the alley alongside the Osgood buildings. The fire spread through the entire length of the Mitchell house, the flames shooting across the alley and endangering the Osgood building, which was saved mainly by the wire-glass windows, which withstood the heat and flames, without damage to the glass beyond some cracking. The illustration inserted herewith is that of an automatic, closing triple hung window. The use of wire-glass windows is a labor-saving device, doing away with shutters, which require opening and closing each day. "Smith System" designs have been accepted for use in the Castle Gould now building at Sands Point, L. I., and are being placed in the New York Telephone Co. buildings in Cortlandt Street, and other large edifices throughout the country.

DOMESTIC WATER SUPPLY.

THERE are few things so vitally important to the dweller in the country as a supply of water. This problem has been met in the past by various expedients, some of which have answered for the time, but eventually had to be abandoned. The great importance of an ample and positively reliable water supply cannot be overestimated, as it has been demonstrated that zymotic diseases are due to an insufficient supply of

water or a supply of water which is not fresh or pure. Windmills have been used to a great extent during the past on account of the great cheapness in first cost, but first cost should not enter into so important a question as this, as it is a matter of placing a small amount of money against the lives or health of the people using the water.

The introduction of modern sanitary plumbing has made necessary the element of reliability, and no device for delivering water which does not provide it every day in the year when wanted is an efficient or trustworthy source of supply. Wind-

mills are in some ways excellent where the wind is constant, and attempts have been made to correct the bad habit of windmills not running when the wind does not blow, by putting in large storage tanks, but the great objection to this is that the water may become stale and unfit to be drunk or used in cooking. It is highly important that the supply of water should be fresh and frequently renewed. The Rider and Ericsson Hot Air Pumps, which we illustrate in this article, have been manufactured by the two well-known firms, the De Lamater Iron Works and Rider Engine Co., during the past twenty-five years, and the many thousands in use are a convincing proof that the people are rapidly outgrowing the idea that a slight difference in first cost should be a determining argument in so important an affair as a supply of water. The competition between these two companies and the necessary expense of running them separately made necessary the asking of much higher prices than ordinarily would be charged where selling expenses could be reduced.

The Rider-Ericsson Engine Co., which has bought the entire business of both of these companies, signalized its entrance into the field by reducing selling prices. By the consolidation of these two companies it is possible to make use of special tools, thus enabling the present firm to turn out work which is perfect in every respect, being absolutely interchangeable, so that all parts of one size engine will fit any other engine of the same size. This is a material accommodation, and is only possible with a concern which does a sufficiently large business to enable it to stand the additional expense, for while smaller shops would be forced to pass many parts which would not be interchangeable, but which would answer for a time, the larger company could not afford to do it on account of confusion, should extra parts of engines be required at any time in the future.

As the Rider-Ericsson Engine Co. has made numerous improvements in the engines during the past few years, they would like to have the trade write to them for their latest catalogue, which gives full information regarding such improvements.

The company has offices at 35 Warren Street, New York; 239 and 241 Franklin Street, Boston; 40 Dearborn Street, Chicago; 40 North Seventh Street, Philadelphia; 692 Craig Street, Montreal, P. Q.; and a letter to any of these would bring a catalogue with any special information desired by any of our readers.

METAL ROOFING.

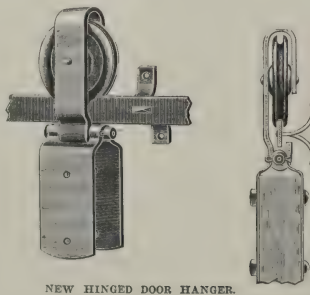
WHAT is known to the trade as I. C. Prime Charcoal Roofing Tin, is used by the Cortright Metal Roofing Company in manufacturing its metal tiles, slates, shingles, etc. This tin is equal to the best made, being selected sheets of steel, heavily and evenly coated. The sixteen years' experience of the firm in the process of galvanizing has enabled it, with this material and its advanced methods, to manufacture metal slates, Victoria shingles, etc., into a perfect product. After the metal slates, Victoria shingles, and various trimmings are stamped into shape they are galvanized by dipping each slate or shingle separately into a bath of metal zinc, which adds a second coat of fully fifteen pounds on each square (100 square feet) of goods. This is done very carefully and slowly, and only one can be coated at a time. It is this extra heavy coating of zinc, specially prepared for the Cortright use, which increases the durability. Each of the slates or shingles is dipped separately, and after stamping, a perfect and thorough coat is given, leaving no raw or cracked edges exposed. Of the two kinds of roofing manufactured each is so satisfactory that the regular metal plates and Victoria shingles made of tin plate and painted, may be classed as fine and the galvanized as superfine. The experience of those using the latter goods is that for many years they require no paint to preserve them. The company make all the accessories of roofing, ridge-coping, hip-covering, valleys, etc. They publish a booklet concerning the roof that gives all the details about Cortright metal roofing, and the illustrations show the appearance of the goods after being laid. It will be sent free on request. The main office and factory are at No. 50 North Twenty-third Street, Philadelphia, Pa.; Western office, No. 134 Van Buren Street, Chicago, Ill.

AN IMPROVED HINGED HANGER.

THE accompanying cuts illustrate a new "Hinged Hanger Rail," and the adaptation of a "Hanger" to it.

As the peculiar advantages of the hinged hangers have come to be more widely known the demand for them has grown apace, but the tracks necessary to use with these hangers have heretofore been so expensive as to operate, no doubt, seriously against their more universal adoption. One of the chief characteristic features of this class of goods, is the retaining guard that runs behind the lower edge of the rail to prevent derailment. To provide sufficient room for this guard and the wheel flange, and also for properly securing a substantial bracket of any previous design, has required the use of a very wide rail with much material in it not essential for strength, and being both clumsy and expensive. The rail here illustrated obviates the use of the very wide rail, by virtue of the brackets used, which permit the adoption of standard size, 1 in. by 3-16 in., rail stock, while retaining all the advantages of the older styles, and at the same time both the individual brackets and the track as a whole are much stronger than the other hinge hanger tracks referred to. The cut illustrates how little vertical space is occupied by the bracket where attached to the rail. This horizontal part has a tenon formed at its outer end, and is mortised through the rail and riveted down solid on the shoulders at the back end of the tenon. Attention is called to the divergent bracing arms, which are integrally connected to the horizontal portion just back of the rail. These arms act as tension and compression members of a truss to support the double width horizontal portion that extends through the rail.

Another point of superiority claimed is that the screw holes are not vertically in line and the screws,



NEW HINGED DOOR HANGER.

therefore, do not tend to split the wood when applied to buildings having the siding put on vertically.

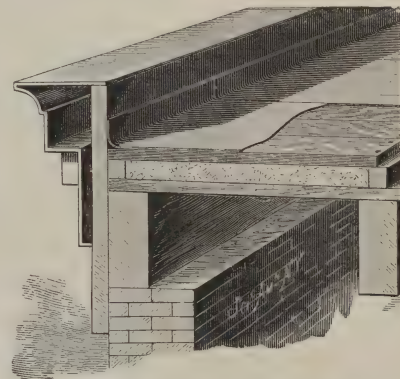
The hangers necessarily have been modified to fit the new track and will be so furnished hereafter. As the cost of the rail bears so large a proportion to the cost of the complete outfit for a sliding door, this new construction should be very much appreciated by the trade at large. These new hinged hangers for doors of barns, factories, warehouses, etc., are manufactured by Lane Brothers Company, Poughkeepsie, N. Y.

SASHES, BLINDS, AND DOORS.

AT Mount Vernon, N. Y., are situated the grounds, lumber yard, sheds, and buildings that constitute the plant of the Hartmann Brothers Manufacturing Company. The location is very favorable for the convenient transportation of material used in the works in making sashes, blinds, doors, and moldings, and the railroad facilities insure rapid handling of its goods in freighting. Special features of the industry include hardwood doors, panel wainscot, mantels, cabinet trim, and bank and office fixtures. The firm are the Eastern manufacturers of Koll's Patent Lock-joint Column, and the rapid increase in this column business has compelled the opening of a large city office in the Townsend Building, No. 1123 Broadway, New York. The address of the Western factory: Henry Sanders, Nos. 77 to 85 Weed Street, Chicago, Ill.

MINERAL WOOL.

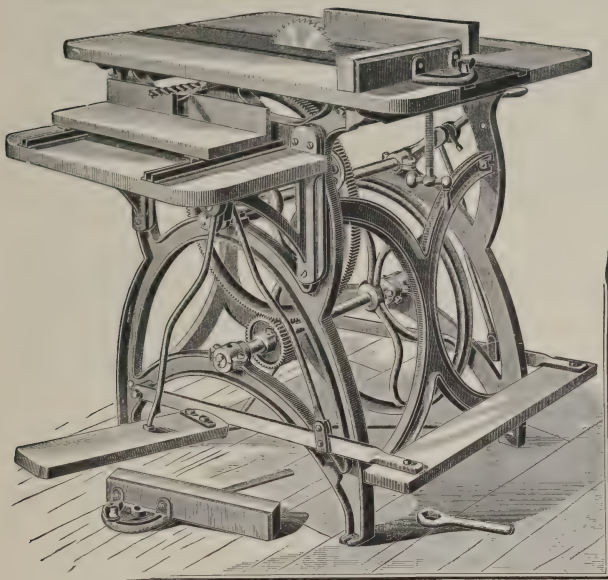
MINERAL wool partakes of the nature of glass without its brittleness, the fibres being soft, pliant, and inelastic. In appearance it is a mass of very fine fibres interlacing each other in every direction, and it is made by converting scoria and certain rocks, while in a melted condition, to a fibrous state. The properties that commend its use in building are particularly in the direction of insulation of heat, protection against frost, fire-proofing, insulation of sound, and protection against rats, mice, insects, and disease germs. By a new and improved process of manufacture mineral wool is unsurpassed in power to resist the transmission of heat and cold. A filling of this wool in the roofs of buildings will prevent the upper rooms from receiving the heat of the summer sun, and storing it up for occupants during day and night. In cold



MINERAL WOOL UNDER A FLAT ROOF.

weather it will retain heat which rises through stair wells, and brings about a regularity of temperature. Water fixtures in bathrooms, closets, and pantries will not be exposed to extremes of heat and cold in houses where this material is employed. In protecting water pipes from freezing it is eminently successful, and its free use for this purpose will relieve the householder and manufacturer from anxiety, annoyance, and loss. A thickness of three inches and upward, according to the exposure, is recommended. The wool is non-combustible and practically indestructible by heat. The chances of extinguishing flames under its retarding influences are greatly increased, and the liability of destruction of a building greatly lessened, all of which adds to the opportunities for escape of inmates, and the possible saving of personal property. It possesses especial value as a non-conductor of sound. Its inelasticity and want of solidity prevent the passage of sound waves through it, and it is now recognized as a deadener of floors and walls of buildings. By analysis the wool is shown to be a silicate of magnesia, lime alumina, potash, and soda. There is nothing organic in the material to decay or become rusty, or to furnish food and comfort to insects or vermin. The fine fibres are an irritant to any noxious or deadly burrowers. Wherever mineral wool is used in bulk it must be held in place by some retaining support or casing. In floors, the best plan is to cover the joist with a rough bottom, upon which lay wood strips to support the upper or finished floor, the strips at least a quarter of an inch thicker than the depth of wool, which is packed between strips before the upper floor is laid. In walls and partitions, the wool should be put in when the laths are applied. After lathing up two or three feet, fill in the wool, then a few feet more of lath and fill up as before until the top is reached. In roofs, the wool can be packed between the rafters by sheathing underneath them, beginning at the eaves and working toward the ridge, packing as the sheathing is done. The manufacturers of this vitreous substance are the United States Mineral Wool Company, No. 2 Cortlandt Street, New York, N. Y.

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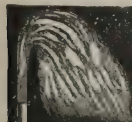
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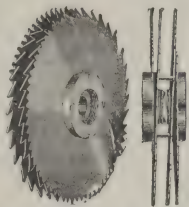
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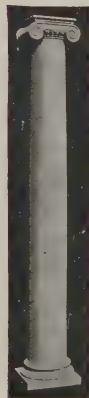
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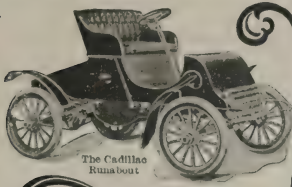
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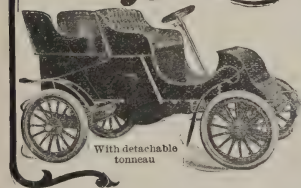
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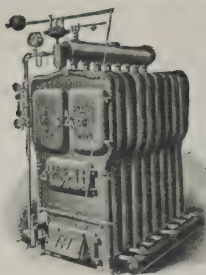
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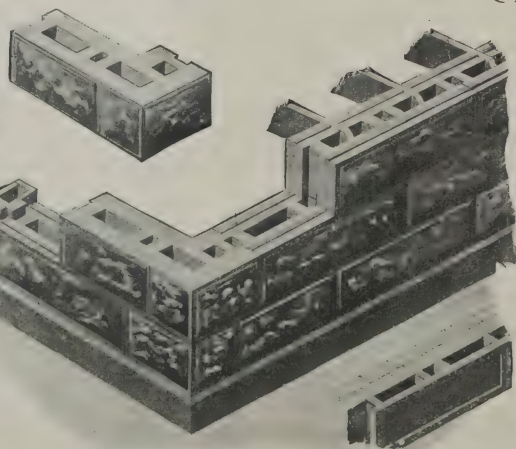
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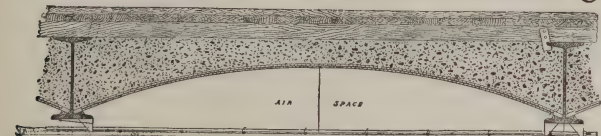


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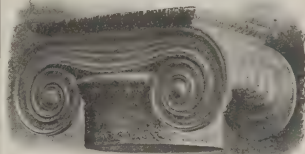
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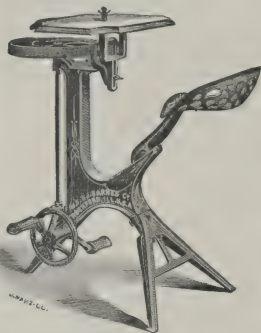
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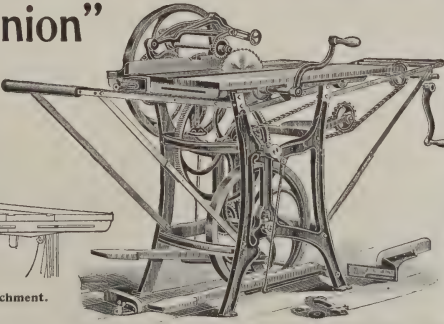
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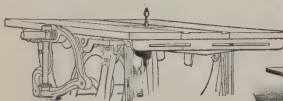
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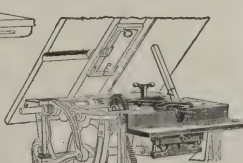
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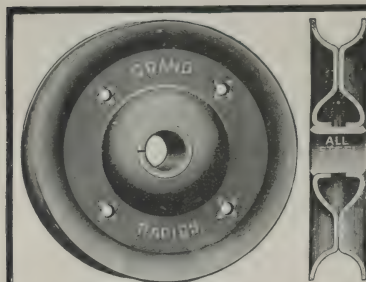
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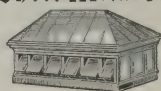
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SCIENTIFIC AMERICAN

Building Monthly.

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No. 212

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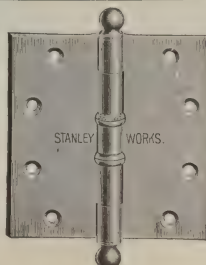
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THE HALL IN A SUMMER RESIDENCE AT SEABRIGHT, N. J.—See page 127.

MESSRS. TROWBRIDGE & LIVINGSTON, ARCHITECTS.

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*The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

ARCHITECTURE, in one form or another, in building, in ornamental construction, and even in decoration, touches on many industries, engages the services of a multitude of men, calls for the expenditure of large capital, and is in active progress during most of the year. The building trades, to use a convenient form, constitute one of the greatest industries of our country—an industry, moreover, which is indispensable to human life and activity, and which is directly concerned with the progress of civilization and the health and prosperity of mankind. It is something civilized men can not get away from. Architectural creations—good, bad, and indifferent—surround them on all sides. Their days and nights are passed in buildings; buildings are absolutely essential to human existence.

Yet the popular mind is not interested in architecture save in the most perfunctory way. Buildings are tolerated because necessities; they are seldom encouraged as buildings, although their splendors are often heightened because of the advertisement or renown they may bring. Of interest in them as buildings there is nothing at all. It is both strange and unfortunate that such a condition should exist. It is strange, because buildings can not be ignored even if one would. It is unfortunate, because much is lost by this indifference, much money wasted, much satisfaction destroyed. The meaning and value of architecture is wasted, and a great force for good is cast to one side, or so slightly considered as to be deprived of most of its significance.

Whether architecture is a profession or a trade, an art or an industry, is quite beside the mark. Architecture itself is real; it is capable of real artistic development; it can be both useful and ornamental; it

can be a delight to the eye, and an aid to human endeavor; it can mold and influence human life, depress it by its own poverty, elevate it by its own grandeur. An influence that can be so weighty should not be neglected; and an influence that can accomplish so much should be elevated into one of the most potent agencies for the good of humanity.

The amount of money expended in architectural undertakings in the United States reaches into the hundreds of millions of dollars. It far exceeds the amount expended in other countries; the cities of Europe have been built; their great buildings have long since been completed; new undertakings are much less notable and the opportunities of modern architects much less noble than with us. Yet we lead in architecture, not by the value of our architectural performances, but by the number of dollars we spend for buildings, the rapidity of our operations, the indifferent way in which we pull down and build anew, and the novelty of our devices. Literally put, this amounts simply to supremacy in building; of architectural supremacy, in the artistic sense, we have none at all.

Viewed impartially and from the standpoint of true art, this record contains nothing to be proud of. Our supremacy in building is not a supremacy in architecture at all, but in building and in methods of building. But since architecture is an art—and this aspect is something quite different from the proposition that architects are artists—it is quite clear that we fail to get the most from architecture. In other words, the return for the money put into architecture is only a part of what it ought to be. We neglect the artistic side of architecture and heighten its constructive side. We consider buildings as aggregations of iron and steel, of brick, mortar, and stone. We think of how much money our buildings will return to us in rents, and ponder over the utilization of waste square inches of ground areas. We are veritable Marthas in architecture, and fail to realize the higher aspects that the Marys of earlier days knew and loved so well.

Thoughtful men tell us, and it seems to be true, that good architecture costs no more than bad. And even if, literally, a good building called for greater expenditure than a bad one, it would still yield a higher return in rentals and in good done to the community. That we have a partial realization of this is apparent from the large sums spent by wealthy corporations on great office buildings or on structures intended for their own especial use. Quite a number of the more modern buildings of this class represent a larger cost than was needed by strictly utilitarian requirements; but the value of artistic form and even of extended artistic decoration has been recognized, and some very noble structures have been built for purely commercial purposes because the value of these increased expenditures has been recognized.

SOME PROBLEMS OF LIVING.

THE problem of the housekeeper is one that will not down. It is at once the problem of where to live and how to live. It is the great problem of getting the utmost comfort and satisfaction in life, and, for most people, at the smallest expense. It is a problem of everlasting interest; millions of minds all over the world are given to it, and it appears to be quite as far from solution to-day as in less advanced periods, when all the world kept house because it must, and did not concern itself, as we concern ourselves, with trying to find a solution to one of the most vexed problems that has ever confronted humanity.

The household philosophers are very busy nowadays trying to discover laws which will not permit themselves to be discovered; trying to adjust conditions that contain no element of adjustability; trying to better human life which does not permit itself to be bettered their way; seeking remedies, looking for causes, pointing out betterments, and making all kinds of solutions and suggestions, each one of which may have special adaptivity and point, and yet fail utterly when applied universally.

Perhaps that is the real source of the trouble; for what will do for one man or woman will not help another. The conditions that obtain in the cities differ from those which obtain in the country, and the cities themselves offer differences which can not be reconciled. One buys eggs by the quarter's worth in New York and by the dozen in Philadelphia; and where so considerable a difference exists in communities united to each other by such close ties in such minor matters, what may be expected of the weightier problems of housekeeping?

Nevertheless the experiences peculiar to one city or one district are useful to those of another, if for no other purpose than to make clear the advantages of one's own immediate environment, or perhaps to clear up some deficiencies. The tabulation of household ex-

penses is a matter of unbounded interest, and there hardly exists to-day a person who would not be gratified by the inspection of one's neighbor's expense account, or who would not be glad to know just how much it costs one's friends to live.

Some interesting information on this vital question—that of getting the largest amount of comfort and pleasure from the smallest possible income—has been given by the New York Sun, which has invited confidences on the important subject of what one might obtain on a salary of \$3,500 per year. Incomes are, of course, entirely relative. Three thousand five hundred dollars is modest for New York, perhaps almost insignificantly modest, yet in many other places it would be more than a sufficiency, and might well mark out its happy possessor as a man of wealth and a man of standing.

A late contributor to the Sun's discussion talks very frankly of his circumstances. His salary, it appears, is somewhat less than \$3,500 per year. Both he and his wife were brought up well and with most of the luxuries of life, and yet had no inherited capital with which to set up housekeeping. They gave up all thought of keeping up appearances for appearances' sake, and contented themselves with a moderate establishment which suited them—the parties most to be suited. They found an apartment located within a block and a half of Fifth Avenue, which they rented for the miraculously small sum of \$65 per month. Their home is described as well furnished, with a good reference library and a fair sprinkling of the books of the year and the current magazines. They have some good prints on their walls, but have no white and gold ballroom. Details as to cost of servants are not given, but it is hinted that, as the two kept are exceptional in their qualities, it may be inferred that they are not the cheapest element in the outfit.

For dinner they have soup, fish, and a roast; drinkables are not served, as the wife objects to them. The table china is described as delicate, and the silver, we are informed, does not call for replating. They give no dinner parties, but entertain occasional friends, giving and accepting no hospitalities in the fashionable sense of the term. They go to the theater about once a month, and the lady belongs to a subscription library and goes to lectures as she pleases. The man of the house belongs to a club—a good one, but not the most expensive. In the summer the wife and baby get off for five months, and the husband follows them or not, according to the vacation he obtains.

As for clothes, he guesses she has about half a dozen gowns a year, half as many hats, about a million shirtwaists, shoes, buckles, beads, handkerchiefs, and other articles. He himself does not have more than four suits a year, evening clothes not counted, and he buys, so it seems, a pair of shoes about every fifteen minutes. Doctors, nurses, and drugs have averaged about three hundred dollars per year for seven years. They have no debts, and each year some additions are made to the baby's savings bank account.

Surely this is a charming and delightful picture, and the gentleman who composed it regards his existence as so complete and happy that he rightfully concludes his confession by suggesting that any one who can not get along on ninety dollars per week should send for a plumber to stop the leaks.

Quite a different account is presented in a book of below-stairs memoirs recently published on Millionaire Households. There, apparently, is no thought of expense, no need to make ends meet, no need to count expense, no need to do aught but get the most and pay the most if it is needed to get it. Servants stand on every hand, each one has a specifically assigned duty to perform that no one else can, by any chance, perform so well or perform at all. Money without limit is spent on entertainments and on the wardrobe; it is one continuous trickle of dollars and checks.

Where money is not counted no record of household expenses can be presented. The millionaire is not concerned with such petty trifles. He has a palace on Fifth Avenue, a cottage in Newport, a summer place in the Berkshires, a house in the South, a place of resort in England or Scotland. His yacht is moved about from place to place; his stable is crowded with horses, carriages and automobiles. His library is filled with costly books, his art gallery filled with the rarest paintings; he has money only to spend it, and he spends it royally, every day, and every minute of the day. It is a delightful existence—or it would be if it were not so necessary to get the utmost joy and the utmost satisfaction out of life. It might be restful if it were not for the competition of other millionaires. It might be quiet if one did not have to keep perpetually on the move. Occasionally a rich man will come forward and bewail his lot and regret the duties entailed upon him by his wealth. But most of these gentlemen keep up their hot pace, and few of them are willing to let less fortunately situated neighbors have the privilege of spending their money or of relieving them of the hideous cares of great wealth, utmost prosperity, and necessary extravagance.

TALKS WITH ARCHITECTS

MR. GEORGE B. POST ON THE NEW YORK STOCK EXCHANGE.

THE erection of individual commercial buildings in New York City proceeds apace. The Clearing House was the first of this class; it was followed by the Chamber of Commerce, and now the Stock Exchange has erected a new building for its exclusive use, at once the greatest and the most costly of the three. Mr. George B. Post, its architect, has erected many important buildings in New York and elsewhere. The Equitable Building, the Produce Exchange, the Union Trust Co.'s Building, the Times Building, the city residences of the late Cornelius Vanderbilt and Collis P. Huntington, the new buildings for the College of the City of New York, are but a few of the great buildings designed and erected by him in New York, while many important structures in other cities have added to his fame.

Before that, however, we had visited the chief portions of the building. The Board Room is a magnificent apartment of magnificent dimensions, so long and broad as to seem to have floor space sufficient for every possible financial transaction, and so high that the tallest man seems lost in it.

"The Board Room," said Mr. Post, "is the part of the building around which everything centers; the building was built for it, and every other part is, in a sense, subordinate to it. The problem here was ample floor space, ample light, and convenient fixtures. The space was obtained by using every possible square foot of ground area for the room that could be obtained for it; the light was obtained by making the two end walls, one of which opens on to Broad Street and the other on to New Street, walls of glass, literally. The outside, as you of course know, is faced with the columns of the colonnades on each front; metal bars behind the columns support the glass and even permit the columns, in a measure, to have an interior value.

close at hand. The rostrum has been lifted altogether from the floor and placed in a balcony. A series of pneumatic tubes lead to the offices of telegraph and cable companies within and without the building. The machinery for these tubes has been so adjusted that all the messages arrive at their destination at practically the same time, although they are of various lengths. On each side wall is a gigantic call board, one the duplicate of the other, by which the brokers can be called, and an indication given as to whether they are wanted at the telephone, elsewhere on the floor, or at the entrance to see a customer.

"Of course, a building like this can not be conducted without the use of a vast amount of machinery. Two floors below ground are filled with mechanical contrivances, most of which are in daily use. The construction of these lower floors involved many special devices. The Board Room floor is itself only a few feet above high-water level. It was necessary to create a watertight cellar, and this was done by surrounding



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SOLDIERS' AND SAILORS' MEMORIAL MONUMENT, RIVERSIDE PARK, NEW YORK.—See page 1130.

MESSRS. C. W. AND A. A. STOUGHTON, ARCHITECTS.

Mr. Post had been kind enough to personally take me over the new Stock Exchange; the visit was made a few days before the opening, and the workmen had not been cleared of the building. It was, however, so near completion as to require hardly more than a final sweeping to make it ready for its occupants.

"You perhaps would be surprised," he said, "to know that the cubical contents of the building is greater than many of the large office buildings, and that only two or three in New York are larger."

And in fact it seemed hard to realize this; for the exterior of the Exchange is a stately colonnade, surmounted with a pediment on which is to be shortly placed a group of sculpture by the veteran sculptor, John Q. A. Ward, himself a lifelong friend of Mr. Post, and the creator of many fine works of public sculpture. But when, presently, we ascended on the elevator to the top floor and looked down the stairways, which have been provided for emergencies, we had a realizing sense of the building's internal altitude, for the total height is necessarily suppressed in design of the exterior. It was a weird view from this top stair landing, the narrow central opening going down to a depth that seemed bottomless.

There are no walls at either end, and we have the largest windows in New York, some of the largest windows in the world, if not actually the largest. These vast windows add very materially to the apparent size of the room and greatly influence its general effect, as the buildings without it seem to enclose it."

"And the washing and cleaning?" asked a practically minded companion.

"Special devices are provided for that, with hooks and pulleys; curtains that can be readily moved have also been provided; and the lower part of the windows are doubled; the intervening space is connected with the heating, and the hot air rises from the lower part of the windows and neutralizes the cold draft from above.

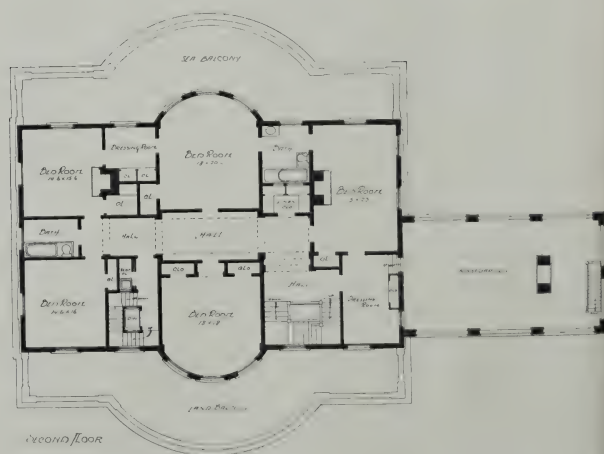
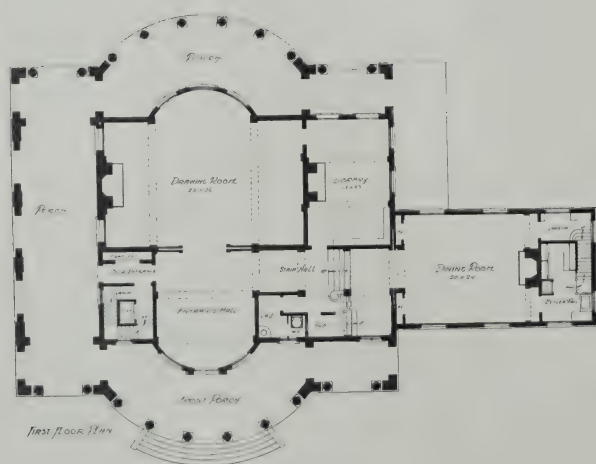
"As for the requirements of the room, they were space and convenience. The 'posts' used by the brokers for the transaction of business contain ventilation shafts—a unique and highly successful method of ventilation. The telephones, of which many hundreds are constantly required by the brokers, have been placed on the New Street end of the room, out of the way of the men on the floor, and convenient for the clerks, who have a special entrance on New Street

the foundations with a watertight dam, the foundations resting on bottom rock. The work was one of the greatest difficulty, not alone on account of the water, but because the vault of the old Exchange was left standing pending the erection of a new vault. Many millions of dollars' worth of securities were left in this vault throughout the entire time of construction, and one of the most satisfactory features of the enterprise was the fact that, when these securities were at last removed to the new vault, not only was not a dollar's worth lost or unaccounted for, but not a single customer placed his securities elsewhere.

"The mechanical plants now installed in the lower stories of the building include machinery for heating, lighting, elevators, ventilation, and cooling. The practical thought suggested itself that if the building must be heated in winter it should be cooled in summer. No apparatus for the latter purpose has heretofore been installed on the same scale as here, but there is no reason at all that I know of why it should not be successful."

And then we descended to the depths, crowded around through engines, generators, viewed air cham-

(Continued on page 127.)

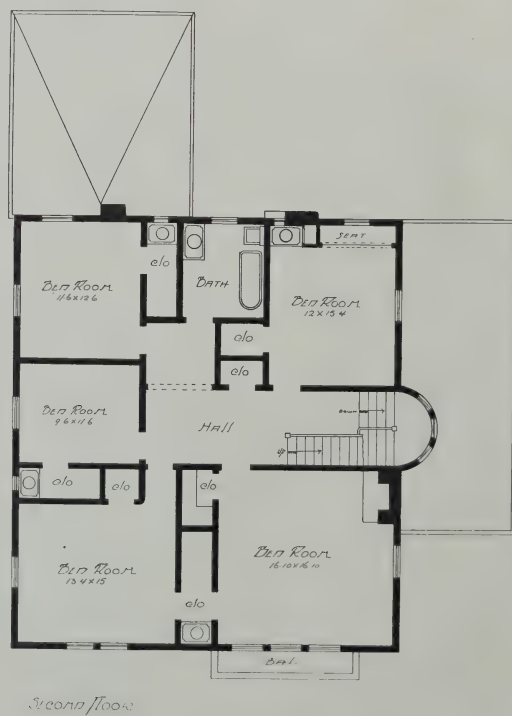
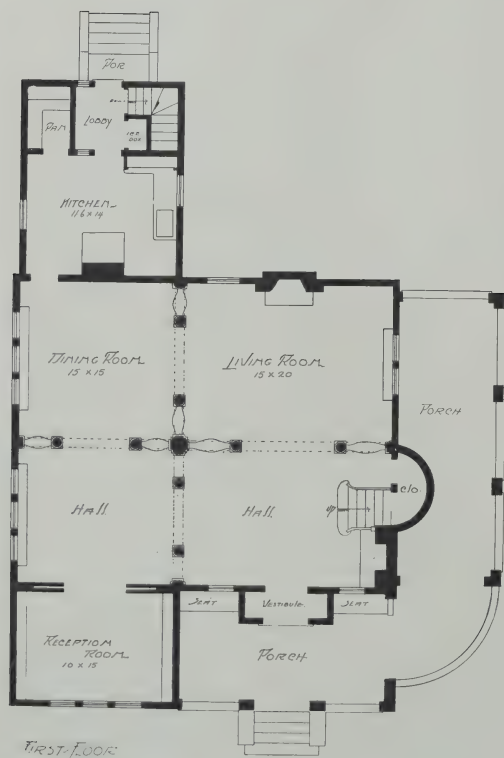


A SUMMER RESIDENCE AT SEABRIGHT, N. J.—See page 127.

MESSRS. TROWBRIDGE & LIVINGSTON, ARCHITECTS.



A SUMMER RESIDENCE AT SEABRIGHT, N. J.—See page 127.
MESSRS. TROWBRIDGE & LIVINGSTON, ARCHITECTS.



A SPANISH HOUSE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 127.

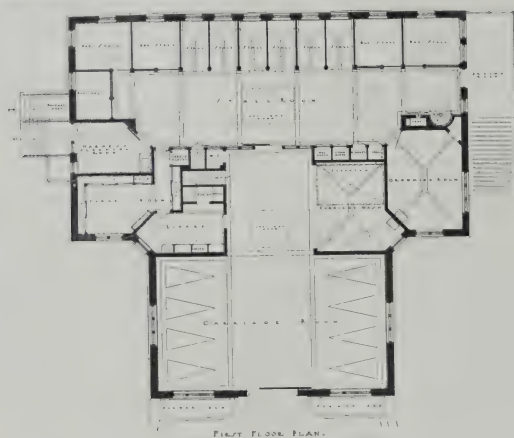
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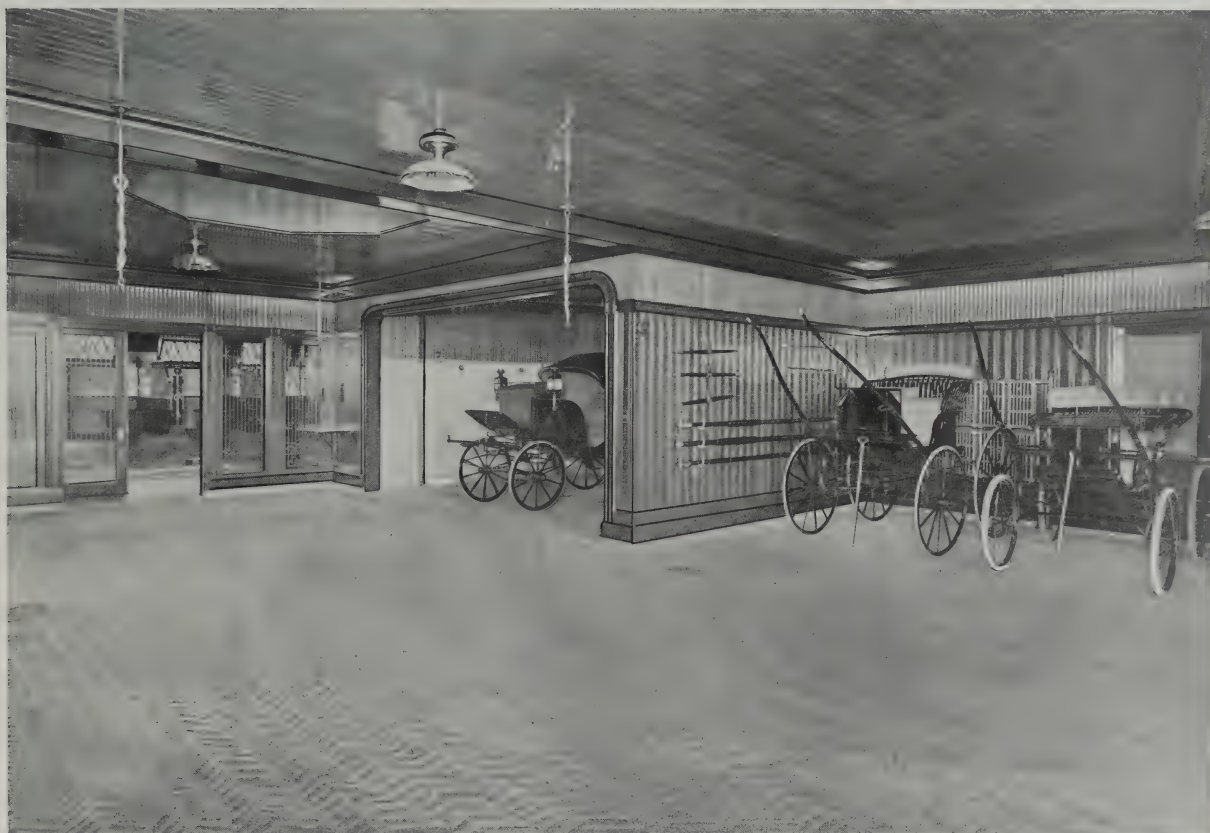


HALL AND STAIRCASE IN THE RESIDENCE OF C. S. REDFIELD, ESQ., GLEN RIDGE, N. J.
MESSRS. JARDINE, KENT & JARDINE, ARCHITECTS.



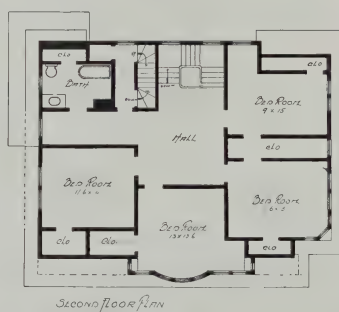
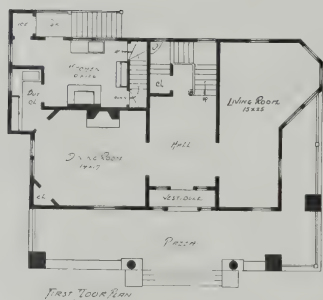
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MR. C. P. H. GILBERT, ARCHITECT.



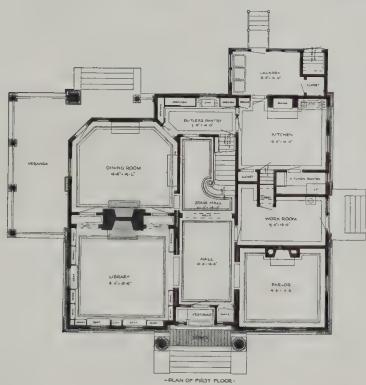


A MODERN STABLE.—See page 128.

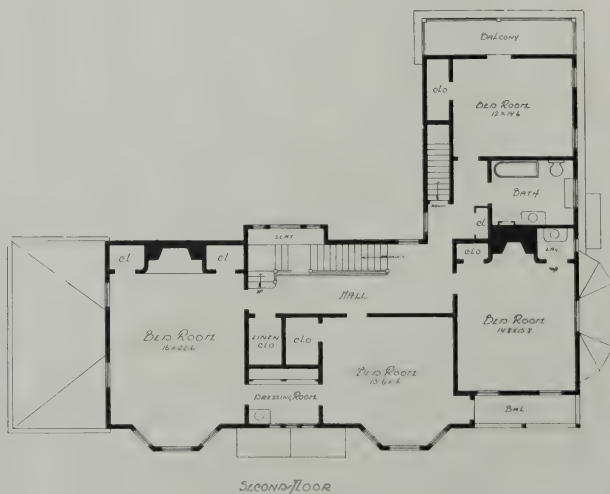
MESSRS. BACON & HILL, ARCHITECTS.



A RESIDENCE AT GRANTWOOD, N. Y.—See page 130.
MESSRS. CHILD & DE GOLL, ARCHITECTS.



A RESIDENCE AT NEWARK, N. J.—See page 129.
MESSRS. HILL & STOUT, ARCHITECTS.

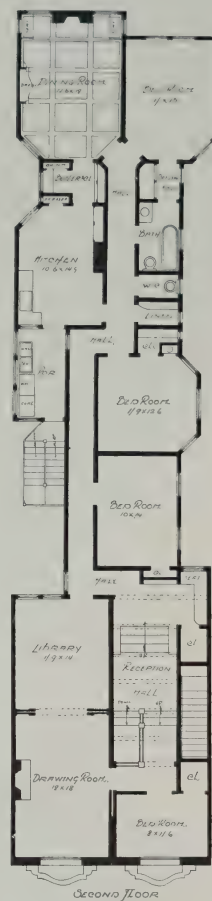
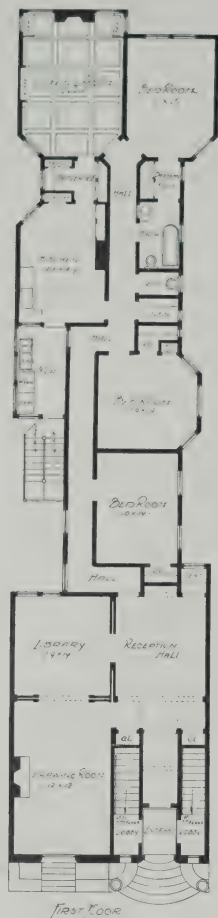


A RESIDENCE AT SOUTH ORANGE, N. J.—See page 128.

MR. FREDERICK R. HASSELMAN, ARCHITECT.



A RESIDENCE AT SOUTH ORANGE, N. J.—See page 128.
MR. FREDERICK R. HASSELMAN, ARCHITECT.



A NEW APARTMENT HOUSE AT SAN FRANCISCO, CAL.—See page 130.
MR. J. FRANCIS DUNN, ARCHITECT.



RECENT ADVANCE IN OUTDOOR ART.

By JANE A. STEWART.

THE growth of the art feeling—the love of the beautiful—in this commercial and industrial age is a hopeful sign of the better times. The movement toward art in common things is most significant. It means that people are beginning to realize the richness of the heritage in the world of nature; that things should be beautiful as well as useful; and to cultivate the artistic and esthetic sense along with the useful and industrial. Broadly speaking, it is indicative of the progress of the nation toward higher culture and a higher conception of life's real meaning and possibilities. Love of art in nature is synchronous with love of the true and good.

The advance made in popular artistic apprehension is shown concretely in the growing willingness of the American people to spend time and money to express a finer sense of the beautiful in outdoor art. Its earliest and most conspicuous development has, of course, been seen in the public parks which are every year enlarging and beautifying their environs and winning the people to their charming haunts. It seems hardly credible, when one reviews the present extensive outlays and great numbers of public parks (the cities of the United States having 75,000 acres of land in parks, and expending \$11,000,000 annually in their improvement and maintenance), that but little more than half a century ago, Boston Common, the few squares laid out in Philadelphia by William Penn, and the small commons in New England towns, were the only open air spaces in America. And these were scarcely areas to which the term park could be applied.

Though we were late in taking up park work, and the American park is a recent creation when compared with the parks of Europe, extensive and beautiful public parks now exist in all our cities, and the movement seems but just inau-



gurated. What this involves in the uplifting of the people is realized from the following statement in the recent report of the park census committee of the American Park and Outdoor Art Association:

"We believe it to be a fact that there is a direct relationship between parks and open spaces and disorder and crime."

The growth of artistic sentiment has followed the institution of parks by demanding in those who build them the fine sense of color and form, the sympathetic and intelligent love of natural beauty which will provide for the preservation of natural scenery; for the artistic and proper grouping of trees and shrubs, vines and flowers; the selection of appropriate sites for monuments and fountains, and so on. The aroused outdoor art sentiment is, furthermore, demanding that public buildings and school houses, churches and depots, be of more artistic architecture—that beauty should be annexed to utility in every possible form.

It has come to be a well recognized fact that nothing can do so much for or against creating a good impression of a town or city as the conditions surrounding its railroad stations and tracks. Under the impulse of the outdoor art sentiment, railroads are now vying with each other to build beautiful and tasteful depots, to lay out pretty gardens and grounds, and to make attractive the pathway through the country in which their roads run. The Boston & Albany employs an expert gardener with a corps of assistants. The New York Central has the services of a landscape architect. The Philadelphia & Reading, the Chicago, Milwaukee & St. Paul, the Michigan Central, the Hocking Valley, Ohio, the Grand Rapids & Indiana, and the Canadian Pacific are other pioneers in this movement.

Outdoor art, like charity, naturally begins at home. The beautifying of home grounds has included not only the cultivation of the front garden, but also of

the back yard, with the idea that there should be no distinction between the alley and the avenue in neatness and wholesomeness. The art impulse has extended to the improvement of the thoroughfares in cities, towns, and villages. The humblest homes have felt the influence of the outdoor art movement, with their neat lawns, vines, and flowers in the windows; and the increasing number of finely kept, park-like private estates is significant of the broad tendency to beautify the home environment. Incidentally, national pride and good citizenship are fostered; for as has been well said, "If you want to make children and people patriotic, make their homes and their surroundings beautiful."

Not only the homes of the living, but the places in which the dead are laid away are being improved by the care and thought of the promoters of outdoor art. Abandoned cemeteries have been converted into beautiful parks where the mourners are uplifted and comforted by the beauty of nature.

The abatement of the defacements caused by the public advertisement nuisance has been one of the happiest results of the new artistic sense. The city of Cincinnati, for example, has condemned promiscuous advertising, and has taken steps so that all public lots owned by the city and all fences erected around new structures shall be kept free of advertising signs. Several railroads, including the Chicago, Burlington & Quincy, and the Boston & Maine, have already prohibited the use of posters on the walls of stations, unless neatly framed. City ordinance and State statute have been secured in some sections, and the enactment of a law by Congress prohibiting advertising on all government possessions is proposed. Thousands who have been blind to the disfigurement of streets and landscapes in their home cities have this year been aroused to the necessity for summary action



by seeing the wholesale destruction of great natural beauty in the vicinity of Niagara Falls.

The movement for outdoor art has happily given an impulse to forest preservation, and has aroused a new sentiment in favor of the neglected native trees and shrubs that seemed in danger of being swept out of sight and the beauty of their perennial natural loveliness lost forever.

It has been well pointed out that with the growth of national prosperity has come the ambition for better things, better homes, better environment, better opportunities. The art which would beautify civic surroundings, as has already been indicated, has its utilitarian side in its improvement of the character and condition of the people. In no way is the appreciation of this fact shown more clearly than in the open space movement by which beautiful squares, formerly private parks, are now made accessible to all. Like the city of London, which is known to have spent four million dollars in opening one little breathing space in a congested part of the city, New York City is now expending millions of dollars to secure to the children as playgrounds the few available spaces that are left.

The utilization of public park grounds as demonstration areas in elementary gardening instruction for school children; the institution of school gardens; the establishment of competitive prizes for home gardens and neat home grounds, are all minor and notable developments of the outdoor art movement. The education and enlistment of the children is one of its most important phases, inculcating a love and reverence for the conservation of beautiful scenery.

The advance of general outdoor art sentiment has been forwarded by special organizations—among which are the American Park and Outdoor Art Association, the Civic Improvement League, and kindred societies.

Reviewing the great progress so auspiciously made within the last decade, the mind naturally looks forward to the goal so surely attainable when America will have been made beautiful, and for all time.



THE PASSING OF VENICE.

By F. W. PARSONS.

(Continued from May number.)

CATHEDRAL OF ST. MARK.

The principal evidence of dangerous decay in St. Mark's Cathedral is to be seen in the interior arch of the Apocalypse, elevated above the main portal of entrance and lighted by the great semicircular window of the western facade. From the interior gallery, back of the lower part of this window and some thirty feet below the center of the damaged arch, the mosaic work shows a crack of about nine feet in extent. The inner end of this arch sags a number of inches. The architect, Signor Manfredi, has been appointed to the care of the cathedral, and he has erected scaffolding near the entrance to the church, and, from the top of it, the full extent of declination is frightfully apparent. Signor Ojetti, a brilliant Italian journalist, ascended to the highest platform of this scaffolding, and touching with his forehead the topmost arch and looking toward the high altar, he was able to distinguish the drum of the dome, so far had the damaged arch of the Apocalypse curved like a lip. Visitors at Venice, in former years, will recall these mosaics, representing the vision of St. John, his rapt figure, the seven golden candlesticks, the angels of the seven churches of Asia, and other details of the Apocalyptic book, executed in mosaic by Zuccati. Manfredi has decided that they must all be removed and the arch reconstructed more solidly. The present arch has a thickness of not quite one foot and is practically a brick shell, constructed probably in the thirteenth century.

Through this yielding, or declination, of this arch, all the iron framework and bars of the great window of the central part of the upper facade are very much compressed and curved, and the window itself is dragged in several inches. In a general examination by Commendatore Boni, he found one of the famous bronze horses, of the outer gallery over the main portal, in a perilous position from an inclination of one of the pedestals upon which the hind feet originally rested. The forefoot, also, that stood on the level of the gallery floor, supported a leg of iron, and the contact of bronze and iron had produced an electric current with injurious results.

The horse was undoubtedly saved from a fall into the Piazza by Commendatore Boni's timely discovery, which preserved the end horse also, the one endangered being the second in the row of four. This quadriga of bronze horses successively adorned the triumphal arch of Nero, the arch of Trajan, and Constantine's Hippodrome at Constantinople, afterward doing duty on Napoleon's arch in the Place du Carrousel at Paris, when stolen from Venice by the great conqueror. After such an eventful history, they seem well worth saving to the Venice to which they were restored in 1815.

Declination, or sinking, has been found in other arches and cornices of the interior of St. Mark's, but these other defects do not presage any immediate danger. By a foundation of the Emperor of Austria, St. Mark's has an income said to amount to ten thousand dollars per annum. This is independent of any additional aid from the national government.

PALACE OF THE DOGE.

For some time it has been apparent that the east side of the Doge's Palace was slowly settling, particularly at the southeast angle, or corner of the building, occupied, for many years, by the Marciana Library. From a gondola, in the canal of St. Mark, this is readily seen by any close observer. The authorities of the national government have been warned repeatedly during the last five years that the weight of three hundred and fifty thousand volumes and ten thousand manuscripts, with various showcases, etc., was too much to be sustained by this end of a palace not constructed for library purposes. The entire eastern side of the Doge's Palace has almost imperceptibly yielded to the tendency toward declination, manifested in the direction of the water. Urgent appeals to avoid an aggravation of this natural subsidence by a removal of the library to quarters elsewhere fell unheeded an official ears. Not the Venetians, but the national government, can be blamed for this inertia, or callous indifference. The appointment of Commendatore Boni to the Regional office and a change of methods in administration have led to the removal of books from this impaired end of the building, and startling discoveries have been the consequence.

Scarcely had the books and shelving been taken out of the principal library quarters when long fissures in the walls appeared, more continuous and deeper than even the most pessimistic prophet of evil had anticipated. When an elevator, or lift, was introduced into these library quarters, a cut was made in one of the principal interior walls, running parallel with the

main facade of the Doge's Palace. This perpendicular opening was twenty feet high and nearly three feet wide, the wall itself having a thickness of only eighteen inches. A massive iron bar, which traversed this entire wing of the Palace, serving to strengthen the wall, was cut away for the space of three palms of a man's hand, to facilitate the introduction of this lift! The foundation wall of this Palace separates the hall of the Great Council of Nobles from the library. On this wall, over the Throne of the Doges, has hung Tintoretto's Paradise, the most gigantic masterpiece in the world.

Recent removal of the Doges' Throne from this east wall of the Sala del Maggior Consiglio revealed cracks and fissures extending upward beneath the framework on which Tintoretto's wonderful picture was stretched. Necessary repairs on this wall involve a removal of this picture, but architects and workmen were alike loath to undertake such a delicate and difficult job. It was finally decided to gently detach the canvas, let it down into the hall and then roll it up, to be readjusted later, if not injured in this process.

This shifting of the Doges' Throne has brought to light isolated pieces of plaster, frescoed in colors of yellow, green, and red, very much darkened and discolored by the fire of 1577, but still showing angels seated upon stalls of a rich choir and playing various musical instruments. The action of these figures is both delicate and graceful. The fresco is attributed to Guariento (Veronese), and was executed in the last quarter of the thirteenth century.

Throughout the eastern wall of the first story, from the side of the Rivo di Palazzo (crossed by the Bridge of Sighs), the same fissures descend. In almost every period, these old walls have been pierced by doors, windows, chimney-shafts, and staircases. Signor Ugo Ojetti is my authority for two examples of the sort of structural engineering practised here.

Underneath the Sala del Filosofo (known for Titian's St. Christopher), there is a staircase with two heavy columns placed upon a gallery or platform, to sustain the beams overhead. Before 1866, in the wall where these two columns ascend there was opened a large semicircular window, so long that the columns, and, with them, the beams and flooring above practically rest upon vacuity. The cross beams which go from the columns of the beautiful Loggia overlooking the sea front to the interior of the palace do not reach the principal wall on the side of the great court in the rear, but rest in the first wall they meet with, which is little wider than a single brick. The eastern wall, on the side of the Rivo of the Bridge of Sighs, has become so impaired and unsafe that it has been decided to take it out, by degrees, and replace it, piece by piece. It is rather singular that the man who made the fatal cut in the wall of the Campanile of San Marco was, and probably is still, engaged on this work in the Doge's Palace.

When the Campanile fell, the long-continued appeal for the removal of the library of St. Mark gained redoubled force; nevertheless, no books were removed for several months. In fact, no building was ready to receive them. The city engineers had long since selected the Zecca (former mint), a building erected by Sansovino in 1536, standing to the left of the Libreria Vecchia, now incorporated into the royal palace. Plans for the transformation of the Zecca were drawn up and submitted to the Ministerial authority at Rome. The preposterous proposal to roof over an interior court and turn the ill-lighted apartment thus obtained (with a well in the center) into a reading-room was, happily, vetoed. Had the Minister ever seen the inside of the Zecca the whole plan would, perhaps, have been abandoned. A short time ago daylight could be seen between the walls and ceiling of the upper floor. One wall inclines outward toward the garden of the royal palace, and the opposite wall bends in another direction. The vaulted ceiling of one room, intended to sustain an apartment above it, has been propped up by massive beams. An iron bar, serving as a connecting link and brace for two parallel walls, having snapped in twain, a similar bar had been placed above it. Mural cracks are visible in most of the rooms, and the stone arch of a doorway has been split by the general tendency toward disintegration.

The ground floor is comparatively sound, and the old treasure room of the Republican era, constructed of substantial masonry, still remains. The proposal of the engineers to sell the iron money chests of the same period for old iron has been rejected. Such is, or was, recently, the general condition of the building which the brilliant engineers of the Genio Civile have undertaken to adapt to library purposes. In view of the weakness of the ceilings of the first story, the small size of some of the rooms and the general character and condition of the walls, plain common sense would dictate taking down the ceilings of the first story and making one floor from the two stories. Shelving, continued to a great height, with galleries of glass and iron, would relieve the strain that, under the present plan, may bring

down the whole building in ruins before the three hundred and fifty thousand volumes are placed in position. The arrangement I suggest has been advised by every man who has visited the libraries of the United States, France, England, and Germany.

OLD RESIDENCES OF THE PROCURATORS.

The long line of buildings flanking the north side of the Piazza San Marco, formerly used as the official residences of the nine Procurators of St. Mark's, were found to be in a lamentable state when examined, in detail, by competent men, the authorities having now been aroused from their official lethargy. For years, the ground floor of these buildings had been leased to shopkeepers, whose wares are familiar to every visitor. The upper stories had been used as warehouses by the dealers below, and also rented out in apartments for families. Every single tenant had labored within his part, or section, without the slightest concern for possible consequences to the static condition of the buildings, as a whole, and with no thought of what his neighbors might be doing in weakening adjoining sections. Doors were opened, walls demolished, conduits introduced.

Lessees scraped and scratched, pierced through, here and there, and overloaded the upper floors with glassware, marble, and furniture, so that the pillars of the arcade beneath sustained a weight exceedingly dangerous. The pressure of this burden was estimated at thirty kilograms per square centimeter. Through this reckless misuse and natural decay evident signs of giving way and occasional fissures had already appeared. It has been found necessary to renew the ties, and supporting walls, arches and pillars have been temporarily braced by heavy timbers, pending the substitution of more durable material.

Any further alteration of the constructive framework of these buildings has been prohibited, particularly cuts or curtailment in pilasters, columns and supporting walls, hitherto much ill used. Heavy stocks of works of art, or interior furnishings, have been ordered elsewhere.

A movement has been initiated, by men of prominence, both in and out of official life, to have these old residences of the Procurators of St. Mark's expropriated, or reserved for public use, or as a national monument, thus taking them out of the hands of private tenants.

SANTA MARIA GLORIOSA.

When Commendatore Boni entered upon his recent examination of the static condition of the public buildings and famous churches of Venice that might be supposed to present indications of decay, one of the first looked into was the Franciscan Church of the Frari (the virtual Pantheon of Venice), famous for its Madonna of Bellini, Titian's Madonna, of the Pesaro family, its beautifully carved choir stalls and for many tombs of Venetian warriors, naval celebrities, administrative dignitaries, artists, and sculptors.

Every one of the cross beams of iron, covered with wood, that span the nave from one pilaster to another requires inspection, and many of them are so evidently broken that their wooden covering sticks out from the tops of the capitals upon which they rest. Long cracks are visible through the plaster of the ceiling of the nave.

Two interior sides of the Campanile form an angle between the left transept and the left nave. Through the subsidence of the soil, the Campanile has sunk a distance variously estimated at from twelve to eighteen inches, carrying the angle of nave and transept down with it, and the arches of the sacristy are, likewise, impaired. The Campanile antedates the church in the period of its construction, and when the latter was erected it was upon a level already higher than the plane of the Campanile. Commendatore Boni sought for the ancient plane of the Campanile, to examine its foundation, and, at a depth of about three feet, water was found, coming, in part, from ancient conduits, then obstructed and undermined among the wells of the cloister and houses beyond the smaller campo adjacent. Professor Ongaro, Boni's assistant, believes it possible to lessen the sinking of the Campanile by hardening the clay, upon which the foundations rest, with additional piles, to be driven into the outer subsoil.

In the left transept of the church the entire wall is traversed by a big diagonal crack. This is due to the falling away of steps of the plinth originally inserted in the perimetral wall of the church. Where the wall should touch the Campanile it now has parted from it sufficiently for daylight to be seen through the fissure. There are other evidences of impairment in the church and former monastery, now the Archives building, but those I have mentioned are the most startling.

(To be continued.)

MR. GEORGE E. POST ON THE NEW YORK STOCK EXCHANGE.

(Continued from page 113.)

bers for purifying the air brought into the building, looked at gigantic fans to propel the air upward and to bring it within, and wondered at the complicated and costly devices needed for both comfort and necessity.

A little higher up, but still below stairs, as it were, was the great new vault, with its vast treasures of wealth and the elaborate devices for protection and security. Then there were rooms for employees, accommodations for the messenger service, miles and miles of telephone wires, pneumatic machinery, rooms for the employees and coat rooms for the messengers.

It was somewhat of a jump from the lower rooms to those above the Board Room, but swift elevators quickly performed the journey, and we were ushered into an entirely new part of the Exchange's business. Here was the Board of Governors Room, an ornamental apartment, pleasantly treated, but with many panels, on which, in time, Mr. Post hopes to see the whole history of finance depicted in mural decorations—a fine idea, that should not be long in realization. It is a rectangular room, with an arcade on either end, and lighted by windows at the back and through a skylight in the roof. Other rooms on this floor are the extensive offices for the secretary of the Exchange, the President's office, and other rooms for administrative purpose. On the floor above are the sumptuous rooms used by the Luncheon Club installed in the building, which has a kitchen on the uppermost floor, where are storage rooms and offices for related organizations.

The great Board Room gives the keynote of immensity to the whole building. It is entirely true, as Mr. Post remarked at the beginning of our journey, that the size of the structure is not readily realized. But even a hasty visit convinces one of this, and the generously planned halls—wide and high—of the upper stories add to the impression of immensity. And it seems proper enough that the chief quality of the Stock Exchange should be immensity; for the aggregate of its operations is staggering to one not a statistician. The building contains no elaborate decorations; the lower walls are generally faced with polished white marble, but there is no over enrichment and no lavish display. Even the Board Room is simply treated, the great marble panels on either side of the call boards, and the gilded capitals and beams of the coffered ceiling being the single notes of color. Yet the building is most interesting as a type of modern architecture, and as an illustration of the complexity of modern life. It was built that the sale of stocks and bonds might be conducted with the utmost dispatch and with every possible convenience. Millions of dollars were spent to secure this result, and many varied industries and many ingenious minds were taxed to bring about this splendid result.

BARR FERREE.

VENTILATION THROUGH SPECIAL OPENINGS.

WHERE special openings for ventilation of workshops and factories are used, these are in the great majority of cases open windows. As a general rule this seems to be the most practical arrangement in ordinary buildings. Where permanent openings, such as ventilation shafts, are also provided, they are either insufficient in number or size, or have been blocked up in cold or windy weather, and left in this condition. Windows used for natural ventilation require constant regulation.

Where open windows are used as outlets it not infrequently happens that a staircase, or the shaft of an elevator, is the principal inlet. If the air thus entering has been more or less warmed by passing through a basement or ground floor which is heated in winter this arrangement is successful; but often enough the foul air from one flat is allowed to pass up into the next, so that the incoming air for the higher flat is too impure.

THATCH ROOFS.

THATCHERS must be a stubborn race, for they have preserved the traditions of their craft in spite of modern improvements; and, though the best materials are not now available, reeds being no longer grown for the purpose, and wheat straw being too much broken by the thrashing machinery, their work seems to be done as well as ever. Neatness, which is the bane of slate and tile roofs, is most appropriate to thatch. The more it resembles well-combed fur, and the less it suggests a heap of sodden refuse, the better. The characteristic beauty of thatch is the grace and ease with which it undulates over the hips and dormers, and projections of every kind, combined with the curious sense of snugness which it conveys. No eaves gutters are used, and no flashings are necessary against stacks or gable copings. If the walls are plastered a coating of tar about one foot six inches high along the base is a sufficient protection against damp.



The Garden

NATURAL AND ARTIFICIAL BEAUTY.

BY WALTER COPE.

If we are to arrive at the true sources of artistic enjoyment we must cultivate and love and study first of all Nature, and after that man's history, man's ideals, all in fact that has led him to express his wants, his aspirations in physical form. This last is nothing more nor less than the study of architecture in its broadest sense. For all that man builds with an eye to use and beauty is architecture in the sense that is governed by one system of principles and laws. From time immemorial man has built houses and temples and bridges, has heaved roads and laid out gardens and wrought whatever pleased him upon the face of the earth to satisfy his needs, material and spiritual. And from time immemorial it has pleased him, and it pleases us to-day, and will always please our descendants, to follow certain methods, certain principles of dimension, direction, and proportion in that which we lay out and build. These methods are no doubt deduced primarily from our innate sense of natural laws. But it is scarcely necessary to go into the source of them. Suffice it to say that it is an indisputable truth that man prefers to set stones level, to build walls straight, or, at least symmetrically curving, to make level places on which to stand or walk, whether they be floors beneath a roof or terraces under the open sky. His sense of mastery of Nature is expressed in doing things not as Nature would do them. Nature upheaves and splits and tumbles down her rocks. Man hews them into blocks and sets them level and true and rears them into walls.

In every landscape, then, these two elements must remain distinct. We can not absolutely unite them nor deceive ourselves into thinking that we can. We can not modify to any extent worthy of consideration the processes of natural growth, or at least such modification can be but temporary. Nature is absolutely continuous and consistent. We must then regard ourselves only as intruders—invasaders.

About the middle of the century just passed there grew up a school of landscape gardeners, so-called, which proposed rather to imitate and follow Nature on the lines which she has always reserved for herself. This school still has its disciples, and the results of its work are all about us, and have caused, to my mind, a most deplorable subversion of the laws and the principles upon which beauty in landscape must depend. Nature is entirely able to do without the aid of man, and it is equally true that it is impossible for man to imitate Nature without making himself and his work more or less ridiculous. When he attempts it, he must cast to the winds all the methods, all the principles which he has developed in centuries past, and he must play at his game as a child would play at a horse. But every once in a while he has to leave his play to attend to the serious matters of life, to build a house or a flight of steps, and these he has to do on the same good old lines that have always prevailed in architecture. He may build his silly little rookeries in would-be imitation of Nature, and cut his meaningless winding walks, but he can not cease to build civilized buildings, he can not be content to live in caves or rude, shapeless huts.

Nature, in her own wildness and ruggedness and majesty, we can not rival, and she, on her side, makes no attempt to rival us. The majesty and beauty of the lonely mountain side we can not create, but we may invade it without destroying its charm. Nay, more, we may introduce the human element in a way only to heighten and increase that charm, and it is just where those two elements meet, each in its purity, its frankness, its directness, that we often find the very highest and keenest sense of the beautiful. Can anything be compared in beauty with the views from out the terraced gardens of the Italian lakes, across the deep, smooth surface of the water to the great mass of the Alps beyond? Is a flower ever more beautiful than where it has grown in the crevices of a mouldering ruin? And which is more desolate—the city street devoid of one touch of natural growth, whether of leaf or flower, or the unbroken expanse of a trackless plain? We have our moods when each of these may please us, and Nature has every advantage both in majesty and beauty, but it remains that man is a social being, and, as a rule, he loves to be reminded of the existence of his fellow man both past and present. He will never resent the evidences of that existence if they occupy a reasonable and proper place.—From the Thirteenth Annual Report of the Fairmount Park Art Association.

A SUMMER RESIDENCE AT SEABRIGHT, N. J.

THE summer residence which is illustrated on cover and on pages 111, 114, and 115, has been erected for James A. Scrymser, Esq., at Seabright, N. J. The building is treated in the Italian Renaissance style of architecture, and is constructed of stucco. The color scheme is pure white for the walls and trimmings, Italian green for the blinds, and a green copper roof. Dimensions: Front, 90 ft.; side, 50 ft., exclusive of porches. Height of ceilings: Cellar, 8 ft. 6 in.; first story, 11 ft.; second, 10 ft.; third, 9 ft.

The entrance-hall, square in form, is trimmed with antique oak and has a heavy paneled wainscoting, and a pilaster effect rising and supporting the massive wooden cornice. The side entrance, with stairway and lift, is a convenience. The stair-hall leads to the grand staircase, with its ornamental balustrade and broad platforms, the first one from which entrée to the dining-room is obtained. The drawing-room is treated in the Louis Seize style, with paneled walls, pilaster and beamed effect. The open fireplace has Sienna marble facing and a hearth, and a Louis Seize mantel. The library is trimmed with mahogany and has a beamed ceiling and bookcases built in. The open fireplace has Numidian marble facings and a hearth. The dining-room is treated in the Renaissance style, and is trimmed with antique oak. It has a paneled wainscoting, a wooden cornice, and a massive open fireplace with Numidian marble facings and a hearth and a mantel of the Empire style, with shelf supported on fluted columns. The large butler's pantry is fitted complete with sink, dumbwaiter, dresser, and servant stairway.

The second floor is treated with white enamel paint and Japanese wall paper for the wall covering. There are five bedrooms, two dressing-rooms, and two bathrooms, the latter being fitted up with tiled wainscoting and paved floor, porcelain fixtures, and exposed plumbing. There are three guest rooms and a bathroom on the third floor, besides a trunk room and ample servant quarters. The roof garden over the dining-room is quite an interesting adjunct to the summer house. The basement contains the kitchen and its dependencies, and also the heating apparatus, etc. The floors throughout are of hard wood and highly polished. The hardware is of solid brass and of handsome design. Messrs. Trowbridge & Livingston, architects, 287 Fifth Avenue, New York.

A SPANISH HOUSE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

ON page 116 will be found an illustration of a house, of Spanish treatment, which has been erected for Dean Alvord, Esq., at Prospect Park South, Brooklyn, N. Y. The building is of frame construction. The exterior is of a three coat stucco work of a light gray color, and the blinds and trimmings are painted an emerald green. The roof is covered with shingles, and is stained Venetian red, and is quite in harmony with the rest of the building. Dimensions: Front, 40 ft.; side, 60 ft. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

There is a broad porch at the front, with a vestibule and seats on either side. The plan is quite an unusual one, and the principal floor is simply a combination of columns, forming an arcaded effect. The large openings between the columns have archways, while the smaller openings have low balustrades. The hall contains an ornamental staircase, rising into a circular bay with a broad landing provided with a group of stained glass windows with latticed effects. All of the rooms have a cluster of windows, and in front of which there is a broad window shelf. The reception-room has book cases built in. The living-room and hall have open fireplaces furnished with green tiled facings and hearth and mantels. All the wood-work is treated with a forest green effect. The kitchen is fitted up complete with sink, range, dresser, pantry, and a lobby large enough to admit icebox.

The second floor contains five bedrooms, seven closets, lavatories in each room, and a bathroom furnished with porcelain fixtures, and exposed nickel-plated plumbing. There are three bedrooms and ample storage room on the third floor. A cemented cellar, under the entire house, contains a furnace, laundry, and fuel room. Mr. J. J. Petit, architect, 11 East Thirty-third Street, New York.

HALLS AND STAIRWAYS.

THE interior views of two halls and stairways are shown on page 117.

One of these halls is from the residence of C. S. Redfield, Esq., at Glen Ridge, N. J., Messrs. Jardine, Kent & Jardine, architects, 1262 Broadway, New York.

The other hall is from the house built for F. H. Davis, Esq., at Elizabeth, N. J., by Mr. C. P. H. Gilbert, architect, 1123 Broadway, New York.

A RESIDENCE AT SOUTH ORANGE, N. J.

THE residence which is illustrated on pages 122 and 123 has been erected for Mrs. A. M. Underhill, at South Orange, N. J.

The underpinning is of red brick laid in red mortar. The superstructure, of wood, is covered on the exterior framework with matched sheathing and then shingles, which are stained a moss green, while the trimmings are painted a cream white. The roof is also covered with shingles and is finished with a similar stain, but of a lighter shade. Dimensions: Front, 60 ft.; side, 53 ft., exclusive of piazza and terrace. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The terrace at the front of the house has an artificial stone floor marked off in imitation of tile. The hall is trimmed with quartered oak, and has a beamed ceiling. The broad staircase, which rises to a broad landing with a paneled seat over which is a cluster of leaded glass windows, is separated from hall proper by a double archway which is supported on a fluted Ionic column. The library is a spacious room occupying one end of the house, and is trimmed with white-wood. This woodwork is finished in antique oak. The fireplace is built of brick and has a tiled hearth and facings and a mantel, with bookcases built on either side. The parlor is trimmed with white-wood and treated with ivory white enamel. The dining-room is trimmed with quartered oak, and is furnished with a beamed ceiling and an open fireplace fitted with tiled facings and a hearth and a mantel to correspond with trim. The butler's pantry is fitted with bowl, dressers, drawers, and cupboards. The kitchen and laundry are trimmed with North Carolina pine, and are fitted up replete with all the best modern conveniences.

The second and third stories are trimmed with white pine and are treated with ivory white paint. The second floor contains four bedrooms, one dressing-room, and a bathroom, the latter wainscoted with tile and furnished with porcelain fixtures and exposed nickel-plated plumbing. The servants' rooms and storage space are located on the third floor. A cemented cellar, which is under the entire house, is provided with furnace, coal bins, etc. Mr. Frederick R. Hasselman, architect, Decker Building, Orange, N. J.

THE CRAFTS.

AN English writer describes the crafts as including sculpture, decorative painting, stained glass, mosaics, pottery, carving, plaster work, enamels, textiles, wrought-iron work, furniture, and though perhaps not strictly connected with architecture, printing and bookbinding. These are all generally accepted as embodied in the term.

But he regards the word "craft" as an unfortunate one, inasmuch as it seems so difficult to associate its station and consequence from the word "art." A happier term for any of these crafts would be, perhaps, "applied art," for they all are undoubtedly "art" when conforming to the true principles of decoration and possessing the qualities of sound technique and beauty of design. It may seem unnecessary to emphasize the point, but all the crafts mentioned with the exception of the last two, printing and bookbinding, are distinctly "applied." They are in direct relationship to the building they adorn—are, in fact, part and parcel of its conception and completion. The fact is constantly forgotten that architecture is the mother of the applied arts, the parent from whom they spring, and not the stalking-horse on which the so-called "decorator" may hang his wares.

COLLEGE ROOMS.

AN observant instructor in one of the large colleges for women comments wisely and well, in a New York paper, on the decoration of college rooms, and the comment applies also with equal force to the room of the average girl to-day. Some valiant spirit should start a league for the improvement of decoration, she says, with the aim by example and precept and ceaseless effort to banish from rooms posters, fish nets full of photographs, unframed casual pictures, second rate Madonnas, and tawdry decorations of all kinds. We need some among us to teach us the beauty and value of open spaces on walls, to help us to the appreciation which the Japanese, with their finer aesthetic standards of bringing into relief a single beautiful object or flower, by letting it stand in significant isolation. It matters not how little we have in our rooms, provided that little has excellence and distinction. It is to be expected, in a certain sense, that our college women shall form part of the cultivated class in America, that they shall set standards for others who have not had the liberal training and refining of intellectual and spiritual fiber which advanced education is supposed to give. But if the rooms of our college students are at all an index to the esthetic feeling of our educated class, then they reveal—we must be honest with ourselves—a barbaric delight in gewgaws, in clashing colors, in wild profusion of detail.

**"LIGHT HOUSEKEEPING."**

AT last a protest has been raised against "light housekeeping." "Don't talk to me of care-free light housekeeping," says an indignant woman in *Women's World*. "Light housekeeping is the heaviest kind of housekeeping. It brings up a vision of oil-stoves, delicatessen shops, shabby gentility, a guilty endeavor not to let the right hand know what the left hand doeth, and a conglomerate parlor-kitchen sitting-room dining-room mixture of untidiness; for, unless you have the 'faculty' of a ship steward, it is an utter impossibility to keep things in order in such confined quarters. It can be done, but one has to work with every fibre of her body, as she learns the true inwardness of the word shipshape; so please do not call it light housekeeping! Then, all your friends want to know just how you manage; what is hidden under that curtain, which is your china and which your kitchen closet, and what do you keep beneath the lounge, or back of the piano."

STAIR CLIMBING.

KEEP the weight well over the advanced foot, with the chest the farthest point forward, says Medical Talk. To strike only the ball of the foot on the stairs gives buoyancy of step to most people, although some claim they can place the whole foot lightly on the stairs to good advantage. Be sure and take your time. Remember you are lifting the weight of the body many times, and it is no light exercise.

The work the back has to do ought to be no greater going upstairs correctly than when on a level. The legs are the members of the bodily community which ought to perform that service.

Medical authorities have recommended walking upstairs correctly as good exercise for reducing prominent abdomen and relieving indigestion. The commonly conceived bugbear of some housekeepers may become a boon. They ought to reach the top of the stairs exhilarated, feeling the glow of healthful exercise.

LIGHTING THE BATHROOM.

THE lighting of an elaborately equipped bathroom is often a costly feature. It may have a row of lights around the cove of the room where walls and ceiling join, says a contemporary, or it may have lights in the ceiling, with bracket lights at the mirror or elsewhere on the walls. While some of these lights may be in fixtures out of sight, the visible fixtures are certain to be handsome; they may be in a high degree artistic and beautiful. Any or all of these lights can be turned on at the will of the person using the room. It might be desired to look in one of the mirrors, a touch on the appropriate button would light the electric lamps glowing in gilded torches held on either side of the mirror. Or a touch on another button will bring into view the beauty of the illuminated window. Another button controls the ceiling lights, or the lights in whatever their arrangement may be. So that the room may be lighted in some part only, or dimly lighted, or filled with a glow of light.

BEDROOM CHINA.

THE facilities for china making, says a daily paper, have so advanced of late that the toilet set costing \$17 or \$18 to-day is better modeled and far more tastefully decorated than any that cost \$30 some years ago. The newest sets have tall straight pitchers, narrowing toward the top and set off with poster figures and quaint border work. The design is reproduced on the wide-rimmed basin and every smallest stand as accessory. A novel set of this poster description has the look of the light-tinted Swedish modern ware that is so effective for ornaments. The ivory china groundwork is bordered and paneled in mulberry and russet color, which further carries out the resemblance to wooden ware. An odd set has the body of the pitcher wheel-shaped, higher and flatter than it is round, modeled after old pottery urns. There are Greek wrestlers and hirsute figures depicted in écu tints on a rich dark background. Gaudy sets meant for bungalows and waterside cottages have sailing yachts, windmills, dikes, and some of the characteristic scenes adapted from old tiles that are hand decorated. One model has a gourd vine twined about it, the tiny gourds and thick-veined leaves and tendrils showing attractively. Ducks swimming about in a grass bordered basin enliven another set. And others have the all-over green body with quaint dark handles seen in Dutch pottery. These sets are hospitable and homely rather than handsome, most of the gilding being light and delicate instead of massive.

A MODERN STABLE.

THE photographs and plans shown on pages 113 and 119 present one of the most modern stables in New England. Especial attention has been given to light, ventilation, arrangement, and equipment as well as the construction and architecture.

The first floor is formed of expanded metal and concrete arches on steel frame construction, and the finished floor is imported Adamantine clinker brick throughout, except livery and harness rooms, where marble mosaic is used.

The walls at the heads of all single stalls are of Adamantine brick carried up to the same height as the wooden stall partitions, and above this level to a height of 3 ft. 3 in. is a white enameled tile wainscot extending all around the stallroom walls. Above the tile the walls are finished with redwood sheathing beautifully molded and finished at the ceiling with heavy cornices. The stalls have iron posts trimmed with brass moldings and capitals, and iron grille work above the wooden partitions. All of the iron work showing in the stallroom is painted apple green. Plates designating the names of the horses are hung above the stalls in appropriate ornamental iron frames. At the right of the horse room is a room designed to be used exclusively for grooming purposes, with walls wainscoted to the height of seven feet with "Verdosa" marble and floors of Adamantine clinker brick properly drained. The room is equipped with white enameled sink provided with hot and cold water, with mixing cock, hose, and spray. Into this room the horses may be taken, and all matters relating to the proper grooming done; all appliances for the purpose being at hand, and the room being heated summer and winter. At the left of the horse room is a room similarly equipped for cleaning harness, saddles, etc., preparatory to their being hung in the adjacent harness-room.

The harness-room is finished in quartered sycamore, equipped with harness, bit, and saddle cases, glazed with plate glass. Between the harness-room and coachroom is the livery-room finished in quartered sycamore and equipped with lavatory, wardrobes, drawers, lockers, and other conveniences. The carriage washstand as well as the coach house floor is of Adamantine clinker brick, and the walls of the washstand are wainscoted with "Verdosa" marble at the height of seven feet and fitted with enameled sink, overhead washing apparatus with temperature controller, radiator for drying robes, etc.

The coachman's quarters on the second floor are designed and furnished with all the completeness of a modern apartment. The building is heated by a double hot water system, for winter and summer, and lighted by electricity. In the basement are a number of box-stalls, which may be used for hospital purposes or as paddocks, as they are of ample width and about 25 feet long; the floors of these stalls are filled with peat moss in watertight asphalted basins properly underdrained. A carriage elevator from the coachroom to the large dust-proof room overhead makes possible the storing of twelve vehicles, in addition to the eight on the first floor.

The approaches to the stable are by driveways bordered by granite retaining walls, the area between which is laid out on elaborate plans of landscape architecture. Close attention to every detail and to the most modern methods and equipment have been employed by the architects. The stable fittings and brass trimmings were furnished by the Lynn Stall Company, Lynn, Mass., and embody many features especially designed for this stable. Messrs. Bacon & Hill, architects, 27 School Street, Boston, Mass.

ELEMENTS IN ROAD IMPROVEMENT.

IT is a significant, yet singular fact, that while the farmers have suffered more than any other class from bad roads, and have correspondingly benefited by good ones, the initial impetus for good roads has come from pleasure seekers. The bicyclers were the first to direct attention to this matter in a way to secure serious consideration. Bad roads and bicycling were quite incompatible, and why bicycle if there were no roads on which to travel? Bicycling being apparently an indispensable occupation at one time, the roads had forthwith to be improved. The object lesson taught in this way was most impressive, and it was quickly learned by many people who heretofore had accepted roads as they were and did not understand how they could be permanently bettered.

The benefits of better roads were so speedily demonstrated that the movement soon became general, and the additional demands of the automobilist only voiced general views in the matter. Meanwhile the farmer has been helped in many ways: Transportation is quicker and safer; there is less wear and tear on rolling stocks and on horses. Nevertheless, the best roads are still to be found in high-class residential and suburban districts. The extension of the suburbs, and of the suburban idea, is now the most important element in furthering the construction of good roads.



The Houseboat

SOME NOTABLE HOUSEBOATS.

THERE is nothing, points out a writer in the Tribune, which the true "houseboater" scorns more thoroughly than speed. Speed is utilitarian. Even in the atmosphere of moneyed ease it smacks of commercialism. What has the houseboater, loitering away sunny days in sheltered coves or drifting idly through calm canals, to do with those strenuous ones who rush hither and yon? The houseboat, in its highest development today, costs as much as a yacht; but the cost is put in space, not in speed. Thence those great, comfortable suites of rooms; these accommodations for the whole family and twenty guests or more; these roof gardens and spacious deck parlors.

Pierre Lorillard had a houseboat and a barnboat, the latter carrying his horses and vehicles wherever he went. At the time of his death there was being built for him the boat in which American houseboat building probably reaches its highest point. Incomplete at his death, the boat has since become the property of Sheffield Phelps, for whom it was finished last June. Mr. Phelps has named it the Nirodha. It is over 125 feet long, with a breadth of 23 feet 4 inches. The hull is of steel, the upper works of wood, there are three decks, and it has two twenty-five horsepower gasoline engines. The upper deck extends the full length and breadth of the vessel, and is covered with awnings.

Mr. Lorillard contemplated expending \$30,000 on the furnishing of this boat. Mr. Phelps has probably not spent more than one-third of this sum, but this was sufficient to make a most luxurious interior. J. J. Phelps, brother of the owner of the Nirodha, has a big houseboat 108 feet long, and Clarence K. Dolan, of Philadelphia, owns the Rancocas, of the same length. The walls of the Rancocas are finished in white enamel, and the furniture is mahogany. The main saloon is in Colonial style, with open fireplace and tiled hearth, hardwood floor and heavy rug. There are also piano, bookcase, writing desk, reading table, and divans in this pleasant living room. The Rancocas has made several long and successful trips in Southern waters, her shallow draught adapting her for travel in the shoal waters of that region, and in those of Chesapeake Bay, where she has been used largely.

The Loudoun, the notable houseboat which Lewis Nixon built for Mrs. Nixon, has a deep draught of 5½ feet, to adapt it for use in the waters around New York. The saloon is fitted up with carved pilasters and panels of cretonne, mantel and mirror, and electric lights fitted in the ceiling. The dining-room is 12 by 17 feet, a good sized room in a house, with paneled sides and hangings of blue burlap. Mr. Nixon and his family live on the Loudoun a good part of every summer. At night the boat anchors up the Sound or the Hudson, at Coney Island or in the Shrewsbury, perhaps. Early each morning the crew gets the boat under way, and the owner breakfasts in the cool morning breeze before he reaches the city. At the close of business hours the boat is waiting to steam away again when the owner steps aboard.

George E. Chisolm is another man who lives on his houseboat in summer, although this season it is chartered because of the absence of the owner in Europe. His boat, the well known Pioneer, is almost as much of a twin screw steam yacht as a houseboat. The living rooms are finished in ivory and gold, and the interior is bright and pleasing throughout.

Probably few houseboats have been the scene of more solid comfort than the Wateree, in which L. G. Billings, a retired navy paymaster of Brooklyn, has spent many pleasant summers with his family. Last summer the Wateree made a successful trip through the Erie Canal. The Wateree, which is lying now at the foot of Thirty-seventh Street, in Brooklyn, although only 52 feet in length, is so roomy, compact and convenient on such light draught, that several other boats have been modeled after her.

Dr. R. V. Pierce, of Buffalo, spends some months every winter in Florida on board his big houseboat, Whim-wham. Professor C. B. Moore, the noted archaeologist of Baltimore, keeps his boat, the Gopher, constantly in Florida, where he uses her in making researches in the sand and shell mounds of the Florida coast and rivers.

Forty, fifty, sixty, or seventy-five thousand dollars is not an exorbitant price for a houseboat. But there is just as much comfort on board many a boat around New York that did not cost as many hundreds.

One New York woman got a boat built for \$450, and annually, as soon as the warm days arrive, she migrates to it from her uptown apartment with great delight.

The beauty of the summer cottage on a boat is that the original outlay is the only one, except for current expenses. There is no way to get ground rent out of the owner.

Plenty of comfortable houseboats have been made by building a house on an old scow or canal boat. Such a one, fully furnished for housekeeping, was offered for sale recently for \$400. These boats have, of course, no motive power. They are towed from one place to another, and then lie up in some quiet harbor. W. A. Powers, of Brooklyn, spends every summer in such a boat with his family. The boat is anchored here and there, wherever the fancy of the residents may dictate.

M. Hubbe, an authority on boats, said to a Tribune reporter: "For a summer residence on a houseboat without motive power the first essential is to find an anchorage where the boat will not be swept away, after the fashion of the sad tragedy in 'Rudder Grange.' A man naturally wants to find his family where he left them in the morning when he gets home at night. There is no good anchorage in New York Bay, because the traffic is so heavy there. The biggest boats, of course, are generally round about Newport during the summer. But at Larchmont, Port Jefferson, Oyster Bay, and all along the Sound, smaller boats are anchored all summer. There are many along the Shrewsbury also, and a few up the Harlem River. Great South Bay and other Long Island bays have their share, and, in short, you will find them wherever the water is not too deep or the swell heavy enough to carry them away. There are some very fine boats among the Thousand Islands every summer.

A RESIDENCE AT NEWARK, N. J.

ON page 121 will be found an illustration of a residence which has been erected for John W. Howells, Esq., at Newark, N. J. The design is a fine example of Colonial architecture of the Georgian period, and is reproduced from the old Athorpe house, of Manhattan Island.

The portico at the front, supported on massive fluted columns, and the pilasters at the corner of the building, both of which have Ionic capitals, form the principal feature of the exterior. The underpinning is constructed of a rough hewed brick with good effect. The superstructure is of wood, and the exterior framework is covered with matched sheathing, building paper, and then clapboards. It is painted Colonial yellow, and the trimmings are painted an ivory white. The roof is covered with shingles. Dimensions: Front, 47 ft. 6 in.; side, 52 ft., exclusive of piazza. Height of ceilings: Cellar: 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

Upon passing across a porch laid of brick, with a herringbone pattern, and through a vestibule, one enters the hall, which is a central one, of Colonial treatment. The woodwork throughout this hall is of white pine treated with white enamel. It has a paneled wainscoting and an open staircase with twisted balusters, treads, and risers treated with white enamel, while the posts and rail are turned out of mahogany. This staircase hall is separated from the entrance hall by a Colonial archway built in with a graceful sweep; this arch is duplicated on the main landing of the stairway. There is a paneled seat on this stair landing over which there is a cluster of delicately tinted glass windows. The parlor is treated in the French Colonial style, with the mantelpiece forming the principal feature. The hearth and facings are of Sienna marble. The library is trimmed with oak. It has a row of low bookcases built in around the room, while the spaces under the windows are provided with paneled seats. The fireplace has a hearth and facings of Numidian marble and a mantel of Colonial style. On either side of the fireplace is sprung a graceful arch, same as the one in the hall. The dining-room is trimmed with mahogany, and has ceiling beams and a paneled wainscoting. It also has a fireplace with Numidian marble facings and hearth, and a mantel of mahogany. The butler's pantry is fitted up with sink, drawers, cupboards, closets, etc. The kitchen is provided with a range, pot closet, store pantry, and sink, and the laundry is fitted up complete.

The second floor is trimmed with pine, and is treated with white paint. This floor is planned with unusual care, and consists of a large square hall, from which all the rooms open, the owner's bedroom, a night and a day nursery for the children, and a most unique feature in the nature of a nursery pantry, which is fitted up with a gas range, and a small sink for use in getting the children's supper, etc. There is also on this floor two guest rooms, ample closets, and two bathrooms; the latter have a tiled floor and wainscoting, and are provided with porcelain fixtures and exposed nickelplated plumbing. There are four bedrooms and a billiard-room on the third floor. The cemented cellar, under the entire house, contains a cold storage room, furnace room, fuel rooms, etc. Messrs. Hill & Stout, architects, Townsend Building, 1123 Broadway, New York.



Roads

THE REPAIR OF ROADS.

A CONTRACTOR in Indiana gives some helpful hints on the repair of roads. Whenever a rut forms, he says, it should be repaired at once. The road should be graded in the spring and graveled in the fall. The road will then be hard and smooth, and the gravel will be packed down but not worn out before bad weather sets in. It depends on what shape the crown of the road is in what the condition of the road will be for travel through the winter; if the crown is in good shape it will shed the water in the side ditches, and if they are in good shape the road will remain dry and solid.

The surest way to spoil a good road is to use the road grader and pile all the mud, sod and weeds from the sides and ditches into the center of the road. This makes the road soft and muddy, and it will be impossible for the next coat of gravel to unite with the old roadbed. The result is the road will be spongy. The best plan is to scrape it up into piles and haul to some gully, of which all roads have a few, and dump it there. Another way to spoil a road is to make the crown so steep that all the travel will take the center.

TREES FOR CITY STREETS AND ROADS.

THE Florists' Club of Hartford, Conn., has prepared a useful and well considered report on trees for planting in city streets and roads.

The alanthus is favored for city conditions, as it seems capable of withstanding any possible conditions in a city, such as smoke, dry soil, etc., and it is also free from insects. Other trees similarly constituted are the cottonwood, white poplar, and some forms of willow; then come the European linden and the English elm, both of which are tougher in this respect than the American species. For the suburban and semirurban portions of the city the best all-around tree is the American elm. Its advantages are high but not too dense shade, the ease with which wires can be passed through its branches without mutilating them, its rapidity of growth and its beautiful way of overarching the street. It has the disadvantage, however, of putting out its leaves very late, shedding them continually after the middle of the summer, and its liability of attack by the elm tree beetle. The English elm can adapt itself much better to unfavorable city conditions, but has a greater attraction for the elm tree beetle than the American type. The committee recommends for the suburban parts of the city such trees as red, scarlet, black and pin oaks, horse chestnuts, hackberry, silver and red maples, and black walnut. The rock maple is one of the first to succumb to city conditions; its shade is too dense and it is difficult for wires to be passed through its branches without cutting a large hole through the foliage. The Norway maple has some of the objectionable features of the rock maple but stands city conditions better. Where the trees on an avenue do not reach above a certain size it is recommended that the practice followed in some European cities be carried out; that is, to plant trees which will attain a large size if left to grow, but which are kept within bounds by very severe pruning.

OILING ROADS.

CAPT. H. M. CHITTENDEN, Engineer Corps, U. S. A., prints some observations on the oiling of roads in the Report of the Chief of Engineers, derived chiefly from notes made in Bakersfield, Cal., where conditions are very favorable for the use of oil. The best results are obtained by putting the oil on hot, in the heat of the day, and in midsummer, when the road surface is warm. The oil is more active under these conditions and is more thoroughly absorbed in the soil. If put on cold on a cold day and with a cold soil, it is liable to ball up and be rolled off by traffic, and to absorb very imperfectly and unevenly. Good results have, however, been obtained by cold sprinkling and the cost is about one-third less than by hot sprinkling.

Various methods have been tried and proposed for heating the oil, none of them possessing features of any special ingenuity. At Bakersfield it is said that heating by contact with hot surfaces was not practicable because the petroleum thickened up and became a gummy, viscous liquid. It was considered better to force steam into the oil by means of a steam hose. The apparatus for heating oil is admittedly in a very crude state of development at present. The desideratum would be a steam-propelled sprinkler provided with a steam hose attachment, so that the same power which propels the sprinkler would also keep the oil hot while the sprinkler is in motion.



THE SUMMER COTTAGE.

As a rule, remarks a sprightly contributor to the Sun, people try to put too much into a summer home. The better way is to plan carefully, but to seek to produce an effect of space rather than overcrowding. Any number of the little houses that one finds in cottage colonies are overdone in their decoration and furnishing, and this spoils them.

To begin with walls and floors. Many people decorate the walls with the gay flowered papers that are now in the shops. They are pretty, but one wants to get away from wall-paper in the summer. Besides, near the seashore, wall-paper fades and becomes wrinkled and ragged looking.

Stained or painted walls are the best, but if the walls are merely of white plaster they may be very effectively treated in burlap, in denim, or in matting.

The new heavy grass matting, in artistic green shades, makes a beautiful foundation for a wall of burlap. It is very reasonable, and the burlap comes in the most artistic reds and greens. It can be tacked over the walls, hanging as closely and as neatly as wall paper, but giving that rich look that one finds only in studios in town, for the artists all use burlap for their walls.

Grass matting is excellent for sitting-rooms and dining-rooms, or, if the floors be of hardwood, there are the rugs of grass matting or the jute rugs from Japan that come in gay colorings. Matting, however, is cleaner than rugs, and unless there are plenty of servants it is a more economical floor covering. For cottage bedrooms matting is also the most desirable floor covering. It is now possible to buy old-fashioned rag carpet in strips as long as desired, and it makes beautiful rugs for placing beside beds. For windows, dotted swiss and ruffled curtains are prettiest, neatly hung and tied back so that the summer winds will not play havoc with them. There should be few pictures in the summer cottage, and these should be different from the pictures in the town house.

Rattan furniture is always cool, comfortable, and easy to move. The unweathered oak is good for a dining-room and hall, and there should be plenty of commodious piazza chairs and rattan settees or couches.

For table furnishings in the summer home nothing is prettier or more suitable than the blue and white Japanese china.

The large hallway with which nearly all seashore and country houses are built nowadays offers a delightful opportunity for individuality in decoration.

Japanese umbrellas and lanterns are effective for occasional decoration, but they do not last well and should never be used with any idea of permanency. Japanese bead portières make good doors, and the Italian blankets in their gay stripes are pretty portières between rooms, or may be used for couch covers on rattan settees.

Upholstered chairs or sofas should be banished from the summer home, as well as silver and brass and copper that take such time and attention to keep bright.

The piazza is the most important part of the summer cottage. People live on piazzas in the effort to get plenty of outdoor air, and so the piazza should be made most attractive. There may be matting shades, if there are not awnings, to shut out the glare, and Japanese rugs can be used to advantage. Here again the rattan chairs and tables are utilized. A well-furnished piazza has a table for magazines and books, another for the tea service, and there should be one of the wicker-work stands for embroidery or sewing. A hammock or a swinging chair adds an inviting touch, and a long reed couch with bright-colored washable cushions makes a snug resting place for an hour.

A very pretty effect on a piazza is a row of flower boxes along the railing. The boxes are planted with climbing vines and with geraniums warranted to bloom the summer through, ivy to trail over the edge and some variegated vines to make a setting for the stiff geranium plants. For those that are fond of flowers these piazza gardens are most attractive, and the care of the plants helps to beguile the long summer mornings.

Proportion is a fine thing in all artistic efforts—proportion of effort to result, as well as fine proportions in design and execution. A small house is an ill mate for a huge garden; a great fireplace in a small hall or room is clearly improper. A fine stable attached to a poor house shows a fondness for horses—but human life is more precious. The house and its surroundings must be fit and fit with each other.

A RESIDENCE AT GRANTWOOD, N. Y.

THE engraving presented on page 120 illustrates a residence erected for F. E. Knox, Esq., at Grantwood, N. Y.

The underpinning and balustrade to piazza is built of rock-faced stone of a grayish color, laid up at random. The remainder of the exterior is constructed of wood, and the matched sheathing which is attached to the framework is covered with white cedar shingles left to weather finish. The trimmings are painted white. The roof is covered with shingles and is treated in a similar manner. Dimensions: Front: 46 ft.; side, 25 ft., not including piazza and porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall has a vestibule with entrance door provided with leaded glass windows on either side of the same. The interior throughout is trimmed with whitewood. The hall contains an ornamental staircase with a newel-post formed of a cluster of spindle balusters. The living-room is of large dimensions and is well lighted and ventilated. The dining-room is provided with an open fireplace, built of brick, with the facings and a hearth of tile, and a mantel of good design. A china closet with leaded glass doors is provided in corner of this room. The butler's pantry is provided with the usual sink, drawers, and cupboards complete. The kitchen is furnished with all the modern conveniences.

There are four bedrooms and a bathroom on the second floor; the latter is wainscoted to the height of six feet, which, combined with the walls and ceilings, is treated with china white enamel. This bathroom contains porcelain fixtures and exposed nickel-plated plumbing. The servants' quarters and storage space are located on the third floor. A cemented cellar contains a furnace, laundry, coal and wood bins. Messrs. Child & de Goll, architects, 62 New Street, New York.

THE SOLDIERS' AND SAILORS' MEMORIAL MONUMENT.

RIVERSIDE DRIVE, New York's delightful park on the bank of the Hudson, is now embellished by two important architectural works—the Tomb of Grant and the Soldiers' and Sailors' Memorial Monument, erected to commemorate the heroes of the Civil War. In 1893 the expenditure of \$250,000 was authorized, commissioners were appointed, a competition was held, and the work was awarded to C. W. & A. A. Stoughton, architects, of New York. The original site desired was the Plaza at Fifty-ninth Street and Fifth Avenue, but so much opposition was developed toward this location that a site on Riverside Drive, below Ninetieth Street, was selected.

The monument itself is a circular structure forty feet in diameter and ninety-eight feet tall. Upon the high base rest twelve Corinthian columns, which support a rich entablature and cresting. The interior is a marble chamber sixteen feet in diameter and fifty feet high. There are five niches in it, and the doors and window fillings are of bronze, as is also the flagstaff base. The monument stands on a platform one hundred feet in diameter, from which, at the south, wide steps lead to a terrace and a lower platform with pedestals, steps, and a flagstaff. On the north a long flight of steps leads down to a belvedere, from the seats of which visitors can overlook the little valley which is located at this point. The total length of the approach to the monument is three hundred feet, the greatest width is one hundred and nine feet.

The materials which were used in the construction of the monument and its approaches are marble and granite. The pavements are of English clinker brick, laid in patterns and bordered with marble. Unlike most works of a public nature, not only has the monument been built within the appropriation, but this amount, increased by the premium on the bonds, was sufficient to build the approaches and a small balance was left to be returned to the City Treasury.

A SAN FRANCISCO APARTMENT HOUSE.

A MARKED architectural feature of modern San Francisco is the erection of many apartment houses necessitated by the great advance in real estate values and by the rapid increase in the population of the city.

One of the most recent of this class of structures is one built in the French Renaissance style, with elaborate ornamentation and fine proportion. The especial commendable feature about the plan is that of a separate entrance for each floor. The attic is an appurtenance of the third floor. It is superfluous to remark that the furnishings and conveniences of the interior are of the most modern and convenient character. The architect was J. Francis Dunn, of San Francisco.



MODERN FURNITURE.

THE Art Nouveau movement has affected modern furniture, and, in order to judge of its influence, it is desirable to consider what principles should guide design in furniture; in other words, what qualities furniture should possess. The vast majority of people who use furniture are ordinary persons, and they like to have things which are convenient and comfortable. Tables should not fall over too easily (unless they happened to be supporting certain modern vases at the time). Chairs should be comfortable, especially if they were "easy chairs;" they should not inflict unexpected knocks and bruises, and they should be fairly light in weight, and yet strong in construction. Doors of cupboards and wardrobes should open and shut easily, so also should drawers; trays should slide out and in without raising the suspicion that the door of the wardrobe would have to be taken off its hinges. In asking for comfort, it was not to be supposed that every chair was to be an easy chair, but rather that it was to be suitable for its purpose. There used to be folding chairs which were apt to throw the stranger, in a most disconcerting way, on to the floor unless he sat well back in them, and there are soft lounging chairs, very proper for the boudoir or the smoking-room, but quite out of place in a drawing-room, since no one but an athlete could rise from them save through a slow and laborious process, quite unsuitable to the sudden emergencies which sometimes arise in a drawing-room.

Most people will agree as to the propriety of establishing convenience and comfort as the basis of furniture design, but there would be a wide divergence of opinion as to the best methods of expressing those qualities, and here we get into the realm of taste, about which it was useless to argue. The purpose of convenience and comfort in furniture seems to lead to simplicity, cleanness of line, an absence of features likely to retain dust, a certain display of fancy, and constructional propriety—for sins against construction would sooner or later be exposed and punished, involving the annoyance and discomfort of those who used the furniture. The desire to avoid dust and dirt has led to a prevalence of polished surfaces, and this again to the use of various kinds of wood susceptible of taking polish. It also pointed to the avoidance of complicated moldings and a sparing use of carving. The ideal piece of furniture, therefore, would be simple in outline and treatment; its form graceful, its color pleasant, and here and there would be a fanciful touch enough to show or suggest that the designer had some feeling for design. Much of the ancient furniture which gave so much pleasure satisfied these conditions, and, partly for that reason and partly because of its excellent workmanship, it has survived the changes of this transitory world and has lasted to our own time. But all ancient furniture was not truly esthetic in design and construction; there were not a few pieces to be met with which were faulty in both particulars. It would be a mistake to accept all old examples as perfect, but the bulk of it has survived because of its fitness.

How far does modern furniture possess these qualities? At the outset the question occurred, "By whom is modern furniture designed?" Let us exclude from the term "modern furniture" all that immense amount of what was called "factory stuff," which fill the windows of the ordinary furniture shop, and depresses the spirits of the enlightened beholder. As many people buy it, it was to be supposed that they did not dislike it, though it might be fairly supposed that they do not actually like it. They took it because it was there, and because they had not been trained to discriminate in matters of design. But where was the better class of furniture designed—the kind of furniture that was really worth discussing? Much of it came from the drawing offices of firms, and some of it from the pencils of amateurs, whose work, it may be said without disrespect, appears rather amateurish beside that of men who were in close touch with the sale of furniture. It was one thing to design furniture, but another thing to sell it: the latter implied having an article which stood the test of experience and of constant wear and tear. On the other hand, it was essential that the designer of furniture should have the architectural spirit—that his design should be based upon construction and governed by constructional propriety, and that his ornament should be applied with discretion and should harmonize with his lines of construction.—From a lecture by J. A. Gotch before the Carpenters' Company, London.

New Building Patents

The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the *SCIENTIFIC AMERICAN BUILDING MONTHLY* by MUNN & Co., Solicitors of American and foreign Patents.
A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date of number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

TILES. P. W. Litchfield, Akron, Ohio. April 14.....	725,102
ILLUMINATING TILE. J. Jacob, New York, N. Y. April 14.....	725,342
FLOORING OR PAVING TILE. C. H. Puls, Hoboken, N. J. April 14.....	725,364
TILE FLOORING. C. P. Capen, St. Louis, Mo. April 28.....	725,506
ILLUMINATING TILE. P. H. Jackson, San Francisco, Cal. April 28.....	726,537

CARPENTRY.

STORM WINDOW. C. O. Dodge, Houghton, Mich. April 7.....	724,553
WINDOW CASING AND SCREEN. E. C. Eastman, Cambridge, Mass. April 7.....	724,683
WEATHER STRIP. S. E. Moore, Putnam, Conn. April 7.....	724,726
JOINT FOR CARPENTRY. G. B. Lee, New London, Conn. April 7.....	724,897
WINDOW. P. O. Hultman, Hartford, Conn. April 7.....	725,090
WEATHER STRIP. W. C. Dillon, Los Angeles, Cal. April 14.....	725,052
STAIRWAY. O. C. Uehling, Milwaukee, Wis. April 14.....	725,179
WINDOW FRAME AND SASH. U. & A. Shivel, Chiswick, England, April 28.....	726,362

CONSTRUCTION.

COLUMN. F. P. Angell, Battle Creek, Mich. April 7.....	724,420
CONSTRUCTION OF CONCRETE BUILDINGS. F. W. Garrettson, Baltimore, Md. April 7.....	724,462
COLUMN CONSTRUCTION. A. G. Perkins, Newburyport, Mass. April 7.....	724,495
TRUSS. A. A. Raymond, Chicago, Ill. April 7.....	724,500
ARCHITECTURAL PARTITION. Wheeler and Hargrave, New York, N. Y. April 7.....	724,638
CONSTRUCTION OF CEILINGS, ROOFS, OR THE LIKE. J. Kulbanc, Prague, Austro-Hungary. April 7.....	724,717
STAR STRUCTURE. W. N. Bois, New York, N. Y. April 7.....	724,790
EXPANDED METAL STRUCTURE. G. H. Holl, Cleveland, Ohio. April 7.....	724,866
DEVICES FOR BUILDING CEMENT OR CONCRETE STRUCTURES WITH HOLLOW WALLS, FLOORS, ETC. W. H. Cadwell, Wayne, Mich. April 14.....	725,038
METALLIC LATH. V. Moeslin, New York, N. Y. April 14.....	725,115
ROOF. P. E. Stewart, Hartford, Conn. April 14.....	725,291
FLOOR, ROOF, AND LIKE CONSTRUCTION. P. H. Jackson, San Francisco, Cal. April 21.....	725,846
CHIMNEY PROTECTION. W. C. Hardin, Hartford, Conn. April 21.....	726,100

ELEVATORS.

ELEVATOR. J. Rice, Chicago, Ill. April 7.....	724,504
CONTROLLING DEVICE FOR ELEVATORS. A. H. Bucklew, Newark, N. J. April 7.....	724,662
ELEVATOR DRIVING MECHANISM. M. A. Cleman, San Francisco, Cal. April 7.....	724,663
AUTOMATIC ELECTRIC ELEVATOR. H. Rowland, Chicago, Ill. April 7.....	724,951
SAFETY DEVICE FOR ELEVATORS. E. H. Price, Sioux City, Iowa. April 14.....	725,132
STOP LATCH FOR ELEVATOR CAGES. E. Poche, Hernes, Germany. April 14.....	725,584
SAFETY APPLIANCE FOR ELEVATORS. S. B. Trapp, New York, N. Y. April 21.....	725,892
ELECTRICAL CONTROL FOR ELEVATORS. J. D. Ihlder, Yonkers, N. Y. April 28.....	726,802
SAFETY DEVICE FOR ELEVATORS. Drum and Boyle, Brazil, Ind. April 28.....	726,656

FIREPROOFING AND FIRE EXTINGUISHMENT.

CHEMICAL FIRE EXTINGUISHER. G. W. Coon, Washington, D. C. April 7.....	724,440
FIREPROOF WALL, ETC. J. Schratwieser, Brooklyn, N. Y. April 7.....	724,744
FIREPROOF DOOR OR SHUTTER. J. C. Mallory, Franklin, Pa. April 14.....	725,375

HARDWARE.

KNOB ATTACHING MECHANISM. C. J. Ericson, Salt Lake City, Utah. April 7.....	724,454
SASH LIFT. C. P. Howard, Hartford, Conn. April 7.....	724,701
LOCK. P. Selsier, Reading, Pa. April 7.....	724,746
HINGE. J. Soss, New York, N. Y. April 7.....	724,962
LATCH. F. L. Ackerman, Paterson, N. J. April 14.....	725,017
SASH LOCK. J. D. Mills, San Antonio, Texas, April 14.....	725,577
SASH FASTENER. J. Bohlen, Big Rapids, Mich. April 21.....	725,692
DOOR CHECK. H. B. Handley, Baltimore, Md. April 21.....	725,702
HINGE. R. W. Hubbard, Ashtabula, Ohio. April 21.....	725,712
COMBINED DOOR HINGE AND CHECK. J. W. Morris, New York, N. Y. April 21.....	725,752
OUTSIDE SASH SECURING DEVICE. W. M. Reely, Mis-soula, Mont. April 21.....	726,192
SEPARABLE HINGE. G. H. Schiele, Joliet, Ill. April 28.....	726,577
DOOR CHECK. G. J. Connor, Boston, Mass. April 28.....	726,645
LOCK. J. M. Owen, Ukiah, Cal. April 28.....	726,741

HEATING AND VENTILATION.

WATER CLOSET VENTILATOR. A. Drouillard, Windsor, Canada. April 14.....	725,425
VENTILATOR. H. T. Kline, Dayton, Ky. April 14.....	725,452
HEATING SYSTEM. Glaser and McIntyre, Jersey City, N. J. April 14.....	725,554
SYSTEM OF HEATING. G. H. Jennings, Brockton, Mass. April 21.....	725,717
FLOOR AND WALL VENTILATOR AND REGISTER. J. H. Gilles, Galesburg, Ill. April 21.....	725,743

PLUMBING.

STONE TUB. Wilson Greer, Bangor, Pa. April 7.....	724,464
WATER CLOSET. R. W. Mier, Litchfield, N. J. April 14.....	725,268

TOOLS.

CARPENTERS' PLANE. J. W. Kirby, Dutte, Mont. April 14.....	725,569
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Publishers' Department

TO KEEP THE FLIES OUT.

THE season is at hand when the house fly and other annoying insect pests appear. Sticky fly paper may be well enough in its way, but it only catches a part of the flies, and does not attract the mosquitoes and June bugs. The only sure way to be rid of the annoyance of flies and other winged insects, that have been proved by scientists to be not only annoying pests but dangerous carriers of disease germs, is to keep them out of the house altogether by screening the windows and doors. Cheap, makeshift screens are for sale, but little dependence can be placed in them, for they soon warp, twist, and go to pieces, and it is poor economy to buy them. The only satisfactory plan is to send a list of your windows and doors, with the sizes, to some reliable manufacturer of window and door screens, such as the Burlington Venetian Blind Co., of Burlington, Vt., and get from them an estimate for furnishing all the screens you may require. This firm not only makes screens, but is also a large manufacturer of Venetian and sliding blinds. The Company will be glad to send a complete catalogue of all its goods to any one who mentions the *SCIENTIFIC AMERICAN*.

"GRE-SOLVENT."

THOSE who handle machinery, tinker with automobiles, ride bicycles, or use any implement that contains black, grimy machine grease, find it difficult to get its dirt off their hands. Every automobilist, in fact, any velocist can recollect and deplore the occasions on a country road when, with a machine broken down, a gear loosened, an axle deranged, and grease-covered hands, the only dependence was on the wayside brook and a piece of soap, which meant a long struggle to remove no more than the worst of it. A preparation has been placed on the market called "Gre-Solvent," and put up most conveniently in collapsible tubes, and in tin boxes; and as it instantly dissolves and removes the thickest and blackest machine grease, even when used with cold water, the dread of any inconvenience in the cleaning up of a soiled tourist is happily removed. The base of this ready and efficient compound is secret, but it is apparently a combination of oils and solvents, and the manufacturers claim that there are no acids or alkalis in the paste. Printers' ink and paint also succumb to "Gre-Solvent," so that it finds a place not only in the automobile tool-box, the printing office, the studio, but has the possibilities of a large usefulness in all industries and in the household. This useful cleanser is prepared by the Utility Company, at No. 233 Greenwich Street, New York.

METAL ROOFING.

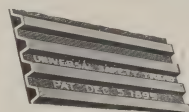
A VERY strong commendatory feature of a product is shown by the fact that the formula for its preparation has been consistently followed for over seventeen years. This is the compound called the "Metal Roofing Paint," which has always been used by the Cortright Metal Roofing Company for its metal shingles. Oxide of iron, pure boiled linseed oil, and other special ingredients known only to the firm, enter into its production. Every part of a Cortright metal roof, metal slates, or Victoria shingles, ridge-coping, hip-covering and valley is painted with this material before leaving the factory, and the painting is done by dipping each piece separately in a vat full of the paint. The goods are allowed to stand several days for the purpose of drying slowly and thoroughly before being put in boxes for shipment. If a metal roof covered with this paint years ago is examined, there will be found no evidences of cracking, scaling, or peeling of the paint, however often it has been repainted. In transportation from the factory to the user, and in being applied, the goods are to a more or less extent scratched or marred; therefore, it is recommended that another coat of paint be put on as soon as convenient after the roof is laid. A coat every four or five years after that will be sufficient to give indefinite life to the roof. The preparation works freely under the brush, has great covering capacity, and dries with a rich gloss that remains for a long time. It is very tenacious, and is especially endowed with climatic resistance qualities. Cortright slates and shingles require no attention or repairs, such as are needed by many other forms of roofing, and each time a Cortright roof is painted, the owner of the building greatly adds to its appearance, and, in a certain measure, has a new covering. The regular article is a red color, but to those who prefer, it is supplied in a slate shade, either dark or light. This application over the metal slates will produce the effect of a stone-slate roof,

without its great weight. One gallon thoroughly covers five hundred square feet of surface. The Cortright Company has its main office and factory at No. 50 North Twenty-third Street, Philadelphia, and a Western office at No. 134 Van Buren Street, Chicago.

UNIVERSAL SAFETY TREAD.

THE Universal Safety Tread is a positive safeguard against slipping. The following are some of its uses: (1) upon stairways, either of stone, wood, or iron; (2) upon sidewalks and coalhole covers; (3) upon the steps of street and steam passenger cars; (4) upon gangways and in engine and fire-rooms of ships; (5) upon runways of fire-houses; (6) upon floors of kitchens of dining-cars; in fact, upon any and all places where people are likely to slip in walking.

This Tread is in use upon the stairways of the Manhattan Elevated Railroad, on the Brooklyn Heights Elevated Railroad, on over two thousand cars of the Brooklyn Rapid Transit Company; over four hundred cars of the Union Railway Company, of Providence; fifty cars of the Indianapolis Traction Company; fifty cars of the Cincinnati Traction Company; fifty cars of



the Springfield Street Railway Company; fifty cars of the Worcester Consolidated Street Railway Company; on all the cars of the Schenectady Street Railway Company and Elmira Street Railway Company; over fifty cars of the Baltimore Street Railway Company, and on about thirty other roads, varying from five to fifty cars each.

It is used by all the car-building companies in the country. It is in use upon the Pennsylvania Railroad, the Missouri Pacific, New York Central (upon the new station at Troy, N. Y.), St. Louis & San Francisco, and various other railroads. The United States Government employ it in post offices, navy yard buildings, and many war and other craft in service. It is adopted by schools, churches, hotels, cafes, steamboats, and miscellaneous institutions and for domestic needs.

It has the endorsement and approval of George A. Fuller Company, contractors, and such architects as Clinton & Russell, Newcomb, Hardenber, and many other leading architects in Boston and throughout the United States. The address of the Universal Safety Tread Company is No. 45 Broadway, New York.

FOUNTAIN PENS.

A WELL made fountain pen, with all its parts finely adjusted and smoothly working so as to insure an easy flow of fluid, quick and thorough cleaning, and one not easy to get out of repair, is the instrument sold by the L. E. Waterman Company, of No. 173 Broadway, New York. This little, compact writing contrivance is called "Waterman's Ideal Fountain Pen," and will stand a favorable comparison with like devices, and, in fact, it is considered in commercial, literary, educational, and private circles to be a standard writing pen of great efficiency. On request the Company will send a booklet describing this convenient and handsome writer. The London address is No. 12 Golden Lane.



FIREPROOF SHEET METAL BUILDING MATERIAL

In the following notice we seek to call the attention of Boards of Trade and other commercial and real estate interests of different towns and cities that would like to be in a position to communicate with a large manufacturer of sheet metal. "A corporation desires to establish a large plant for the manufacture of fireproof sheet metal building material, and solicits correspondence with towns and cities that can offer inducements. Address, M. J. Sullivan, No. 253 Broadway, New York."

SILICA-GRAPHITE PAINT.

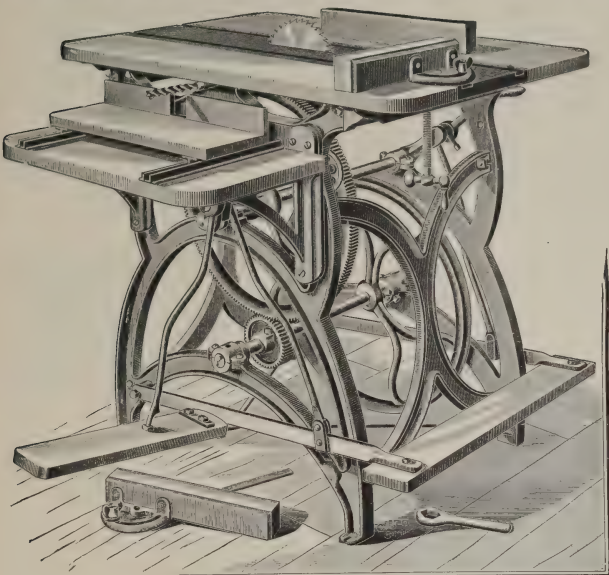
THE compound called Silica-Graphite Paint is a thoroughly established protection for iron gateways, fences, and ornamental work. Artistic effects are at the same time secured. It is made in four colors and one quality, and protects the finest as well as the stanchest of high-class iron work from rust for years. The iron gateway to the P. A. B. Widener mansion at Ashbourne, Pa., and portions of Haddon Hall, Atlantic City, which are treated with this material, are mentioned to show its adaptability to sea or inland exposures. It is made by the Joseph Dixon Crucible Co., Jersey City, N. J. The New York office is at No. 68 Reade Street and the London office at No. 26 Victoria Street.

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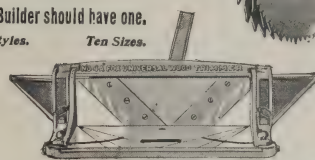
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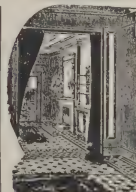
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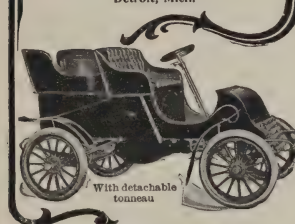
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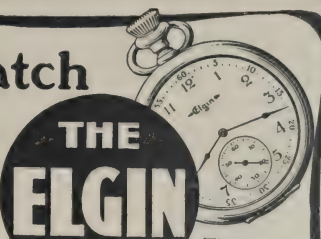
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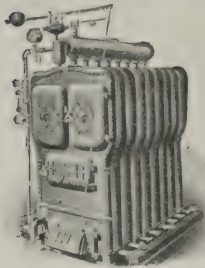
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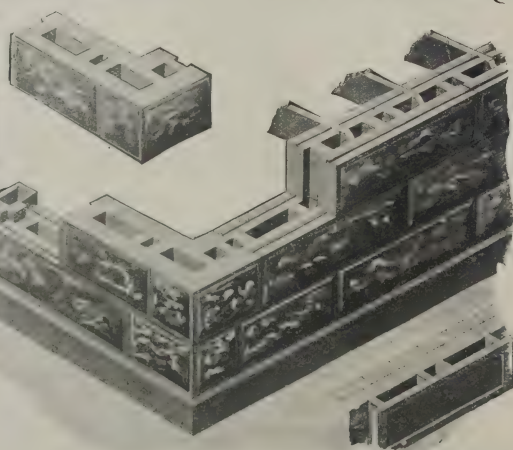
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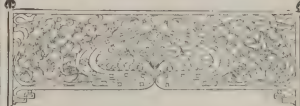
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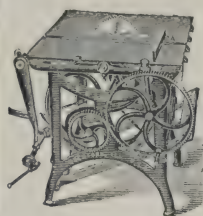
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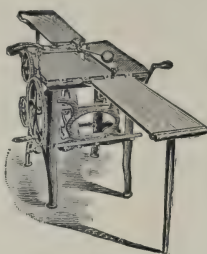
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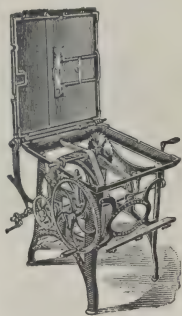
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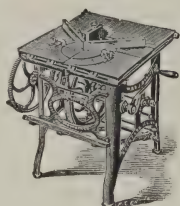
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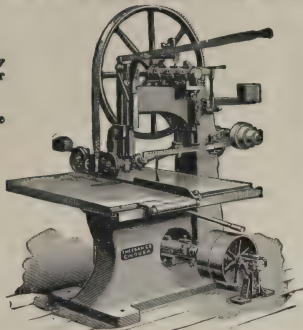
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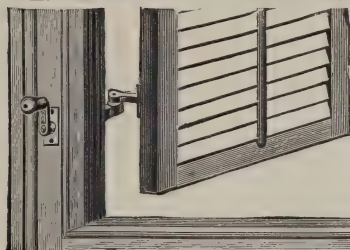
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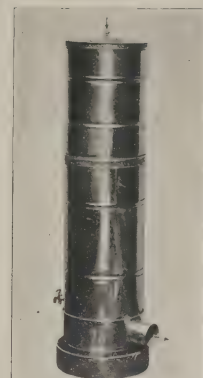
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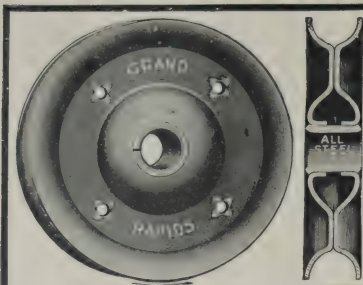
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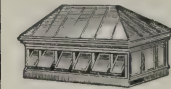
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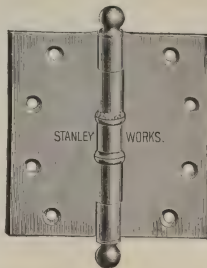
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THE HALL AND STAIRWAY.

A STONE RESIDENCE AT LAWRENCE PARK, BRONXVILLE, N. Y.—See page 21.

MESSRS. W. W. KENT AND WILLIAM A. BATES, ARCHITECTS.

SCIENTIFIC AMERICAN BUILDING MONTHLY

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*The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

The employment of terra cotta in modern building is not only becoming yearly more popular, but the adaptation of the material to modern uses is constantly receiving more and more attention from designers. The true architectural designer attacks his problem from the standpoint of his material, and designs in the material, thinks and sees his conception as translated into the completed structure. The modern applications of terra cotta have not always been happy. Its introduction was the signal for very miscellaneous efforts. It offered so many opportunities for rich effects and superabundant ornament, that its use was hurt by much overornamentation. Conditions have changed in the last few years, and terra cotta is now employed much more soberly. Its real character and its real advantages are more thoughtfully considered. Terra cotta is a most useful building material, and properly employed is extremely valuable and effective.

The value of reticence in design can not well be overestimated. This applies not only to buildings as a whole, but to parts and interior fixtures and decorations. Ornamental devices are intended to ornament, and as a rule much of their value is lost when these features scream aloud for attention, hold the eye, and cast everything but themselves into secondary importance. The merit of a well designed house or a well designed room is its unity. One should remember it by its general effect and not because one especial feature abides in memory. One does not wish to recall a house because of its conspicuous waste pipes; it is equally absurd to remember a room by the persistent form of its chandelier, or the oddity of its window openings.

Color is a much more valuable adjunct to architectural design than is generally recognized. If its importance is not fully valued, it is only because the modern designer has not fully realized its usefulness. The architect is apt to be more interested in form than in color; sculptured ornament is more popular than painted decoration. This, however, is a matter of training and of education. The color of a building, the relations between the colors of the various parts, is more important, in some senses, than the form. Certainly color helps a building amazingly, and material of a good color will often redeem many commonplaces in design. That, of course, is not the true function of color, but it illustrates its importance in design.

Defective construction is responsible for many fires. Defective flues and hearths, wires improperly insulated, stopped chimneys, exposed wood work near furnaces and fires, are some of the simplest causes of destruction by fire. The architect's part in the preservation of buildings, and therefore the preservation of human life, by sound construction, is a most important one. Carelessness and external dangers will often result in most disastrous consequences, but there is little excuse for inefficient construction or for carelessness in building. Every structure should be well built and safeguarded against injury by fire so far as possible. It is better not to build than to build in a way that is hurtful to human life.

Few adjuncts to the house are more helpful esthetically or more useful from a utilitarian standpoint than the porch. It is a feature common both to the town house and to the country dwelling. In the latter, it is true, it is generally expanded into a piazza and becomes a place of resort as well as a shelter; in the former it is primarily a shelter, and often a most useful one. The building laws of modern American cities have not encouraged the building of porches, but they are, nevertheless, of great value, and when designed in an artistic manner, of the utmost interest. A doorway without a porch or shelter of some sort is a forbidding entrance to a house.

The interesting point has been made in New York that a very wide street is undesirable for business purposes. The matter came out in connection with a proposal to widen Fifty-ninth Street, which is a very important thoroughfare, the first street reaching wholly across the city below Central Park, and which will have added importance when one of the new bridges over the East River is completed. The question hinges on the additional width to add to the existing thoroughfare, and the criticism has been made that a boulevard would destroy some of the value of the street for business purposes.

WOMEN AND ARCHITECTURE.

It is well to remember that there is a considerable difference between the phrases "Women and Architecture" and "Women in Architecture." The latter refers, of course, to the efforts of women to enter the profession of architecture; the former to women's relationship with buildings of all kinds. That this relationship is not small is at once apparent when it is considered that women spend by far the most of their time within buildings, their work is largely concerned with buildings, and they realize the advantages of good building perhaps more keenly than men.

Yet the woman has a distinctly personal view toward architecture. It is convenience of plan rather than beauty of design that attracts her. She will turn up her nose at the most esthetic building if it does not contain sufficient closet room and is not amply provided with the very latest useful devices for making life pleasant, easy, and comfortable. She is not concerned with principles, but with facts, and with the facts that directly affect her.

Woman's intrusion into architecture is a direct result of her intimate association with modern architecture as exemplified in the dwelling house, together with her necessity for earning her own living. Few occupations and callings nowadays are without women laborers and practitioners. Even the farms are now cultivated by women. Although all the world knows that that is an ancient practise now long cultivated in the effete countries of Europe, it may be less generally known that women now labor daily in the farms of America, especially in those that are in close proximity to the large cities.

Architecture, long represented as a most delicate and gentlemanly art, has also offered its attractions to women, and since many women have insisted that they alone know how to design houses, there would seem to be an especial fitness in their taking up architecture as a livelihood. Architecture, as a profession, is of course not "easy," and the architect, in the course of his career, is called upon to design and build many other kinds of buildings than dwelling

houses; but the woman's relations to the house are so close and intimate that it seems entirely natural that she should look upon house designing as one of her special privileges and rights, intended to be hers by Heaven, but sinfully taken away from her by grasping men.

Woman's relationship to architecture is, however, of very much more importance than her opportunities to create; that, indeed, is almost the least important of her connections with architecture. It is more to the point that women are vitally concerned with architecture, more vitally than men, more intimately daily, hourly. Her whole life is passed in houses. So profound and lasting is this intimacy between women and architecture that it may be seriously questioned if architecture is not in truth a woman's art, not an art created by women, but an art for women.

Men may view architecture esthetically; they may consider it in a general way, they may exercise a supervision over all building operations; but the woman whose existence is wholly passed within buildings, who daily feels their inconvenience, who thoroughly appreciates their good aspects—it is her art, almost her life.

In the design and construction of every dwelling house the woman's influence is complete and dominant. She may not always judge accurately what she wants or what she should have, but her instincts are generally right, and the woman's intuition is not less valuable and helpful in house designing than in other callings where its value has been longer appreciated.

And so, the woman's influence in architecture can not be avoided even if it is not desired. The broader woman's views on architecture, the better it will be for her, for the men folk of her family, and for the building of good dwellings. Women should know architecture as well as they know the arts generally classed as domestic; and they should know it, not from the constructional side, but from the side of humanity. In other words, there is plain need for courses in our women schools of appreciation in architecture as a means to better human life. Architecture, as now taught in the schools, is presented as a structural science. It is how to design buildings that is taught; whereas the science of knowing what buildings are for and how they help mankind and womankind is what is needed.

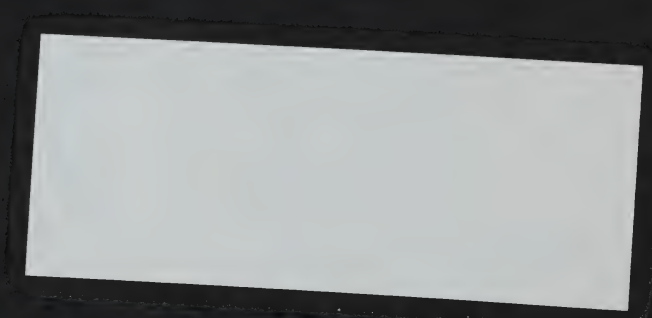
If women should know the positive side of architecture, it is quite as essential that they should learn the negative side. They should know what goes into a house, in its building, and what should be kept out. They should become familiar with building devices, and learn to distinguish the good from the bad. They should learn why one thing is better than another, and be able to distinguish between the blandishment of the advertising agent. Surely it is not too much to contend that if women find profit in inspecting the pages of a fashion journal that they might know what to wear, they might find other profit in studying the pages, advertisements, reading matter, and illustrations of an architectural periodical that they might know in what sort of places to live.

The woman rules the home and rules it rightly. It is hers by right and by instinct. It is hers by occupation and employment. Should she not, then, know something about it? Should she not have sufficient acquaintance with construction to detect poor work and indicate how failures may be remedied? Should she not know what progress is being made in mechanical appliances for the dwelling and how her own personal daily labor may be lightened? Should she not be familiar with the progress of sanitary science as applied to dwellings, and be prepared to discuss at least the simplest problems which are likely to come before her? Should she not know something of the science of heating and ventilation, and be familiar with the practical aspects of household equipment?

And the esthetic side is not the less helpful, not the less essential. Very much energy is wasted in depending on natural taste and natural ideas in the adornment of the house. The house's adornment is quite as necessary in good living as the more rigid details of its construction. This the woman needs to learn and know as well as to practise. She should learn why some colors go well together and some do not. She should know how to use stuffs and other decorative materials. She should have some views on wall paper and paint based on training; and she should know why some articles of furniture are good and others bad. There is, in fact, no limit to the things a woman should know about a house; and the more she knows, the more her views are helped by trained study and sound education, the better it will be for the home life of those who come under her care and who look to her for guidance.

Women have, indeed, a real part to take in architecture, and that part is not concerned with construction or erection or the getting of commissions, but in making life better and nobler, and getting out of buildings the refinement and influence for good which every work of art should produce.

PAGE 3 TO 6 MISSING





FIREPLACE IN THE HOUSE OF GRANVIL W. GOODSALL, ESQ.,
AT WOODMONT, CONN.



FIREPLACE IN THE "ANCHORAGE," THE SUMMER HOME OF
J. PERCY BARTRAM, ESQ., AT BLACK ROCK, CONN.



A FIELDSTONE FIREPLACE IN THE RESIDENCE OF A. M. YOUNG, ESQ., AT PINE ORCHARD, CONN.



A STONE RESIDENCE AT LAWRENCE PARK, BRONXVILLE, N. Y.—See page 21.

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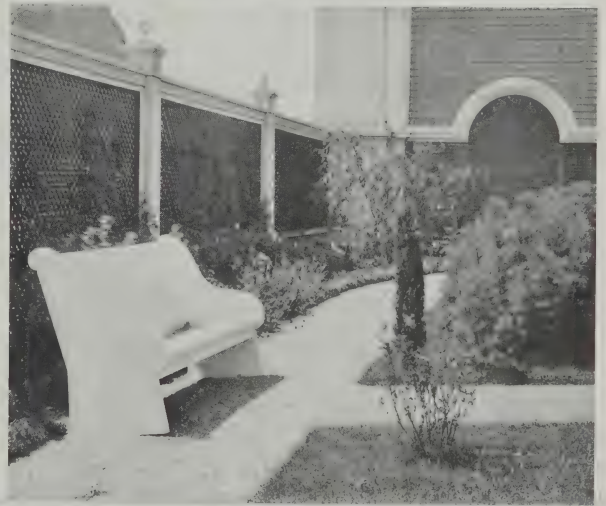
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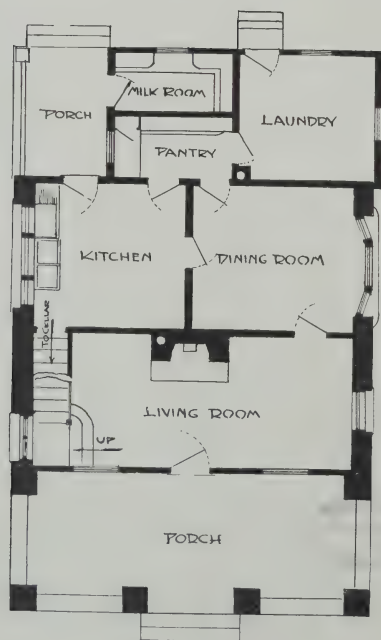


A RESIDENCE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 21.

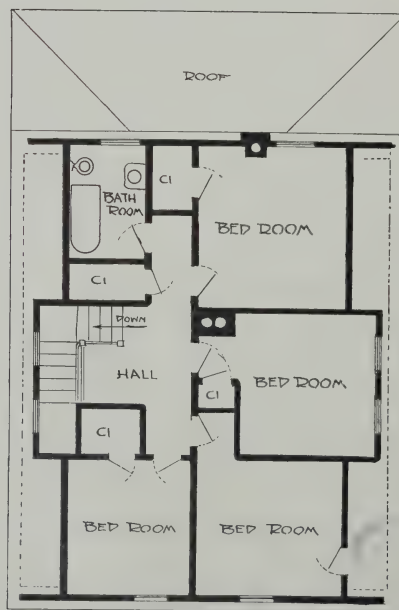
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A FORMAL GARDEN.—See page 18.



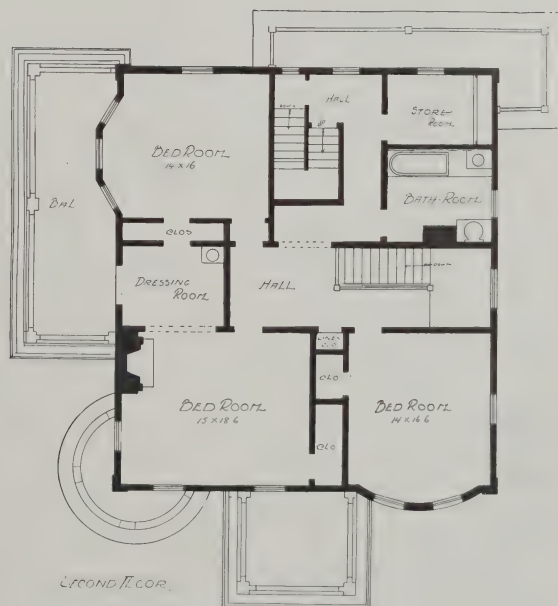
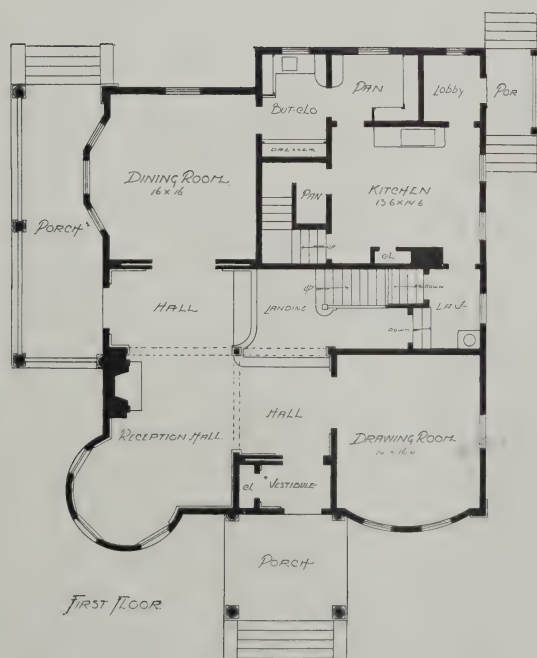
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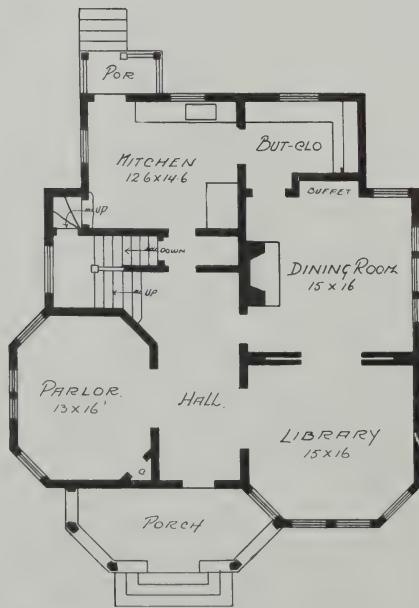
A GARDENER'S COTTAGE AT PINE ORCHARD, CONN.—See page 20.

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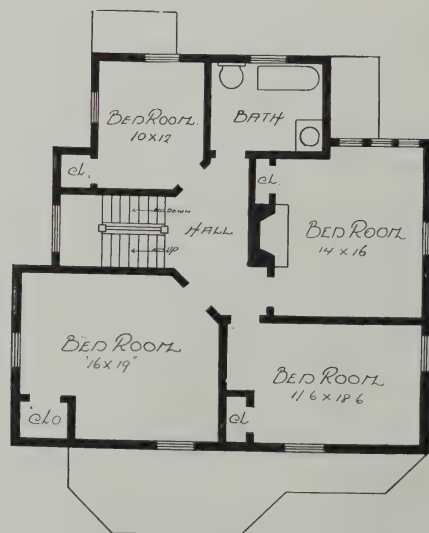


A RESIDENCE AT SPRINGFIELD, MASS.—See page 21.

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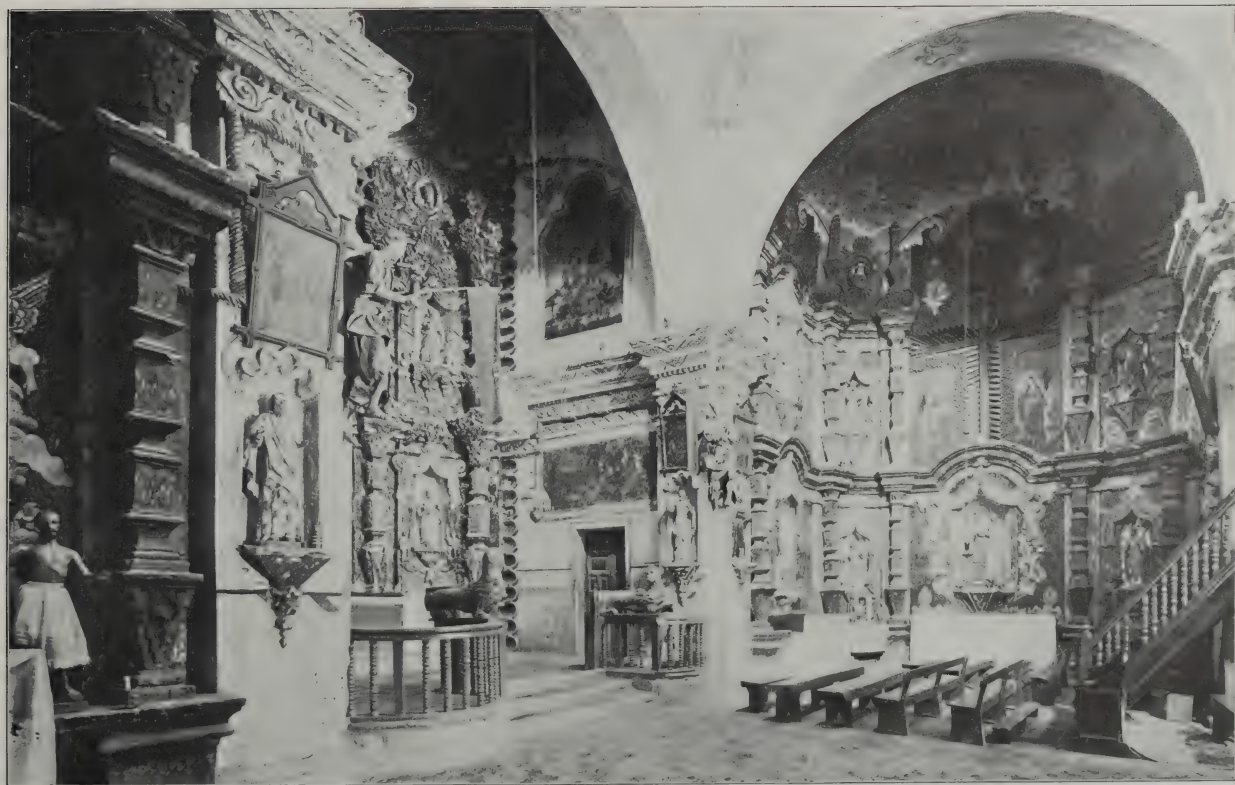
FRESCOES AND HIGH ALTAR.



THE MAIN DOORWAY OF SAN XAVIER.



SAN XAVIER MISSION AND THE PAPAGO INDIAN TOWN THAT SUPPORTS THE MISSION.



GENERAL VIEW OF THE INTERIOR OF SAN XAVIER MISSION.
A DESERT CATHEDRAL.—See page 19.

THE PASSING OF VENICE.

By F. W. PARSONS.

(Continued from June number.)

SANTI GIOVANNI E PAOLO.

The Dominican Church of Saint John and Saint Paul is noted for its tombs of the Doges, and forever identified with the noble resistance of Venice to the unspeakable Turk. It also exemplifies the evolution of the Venetian Gothic style. Loss, or destruction, of either one of these two churches of the Friars would leave an irreparable void in the tangible memorials of the glories of the Republic of Venice.

During mass, one day last August, a stone capital came down with a crash in the church of Santi Giovanni e Paolo, falling at the feet of astonished worshippers. Venetians thus discovered that something was wrong with this edifice. The wall of the transept has been weakened, in former times, by the removal of blocks of stone to make room for side altars, or shrines. The last pillar of the left nave leans toward the door some fourteen inches. A wall of the left transept displays a marked tendency to bulge out toward the exterior, and cracks are spread over it, nearly to the ceiling. Transversal ties were inserted, at some time or other, to strengthen the lofty internal walls, and one of these ties has given way. The sudden fall of the stone capital, mentioned above, was caused by the rusting out of an iron bar which traversed it. Other capitals threaten to fall on account of an opening made directly under the two jambs by two fourteenth-century-style niches.

When the sacristy was constructed, in the eighteenth century, the first of the external supports, which sustained each arch of the lateral nave, was cut away. Recently, behind the picture by Vivarini, to the left of the altar, a deep, irregular fissure was found, lending additional weakness to that side of the church. Structural repairs are needed in the sacristy and in the Chapel of the Rosary, constructed in 1571 to commemorate the great victory of Lepanto, but burned out in 1867. Other details of restoration, now needed, it is not worth while to describe.

SAN ZACCARIA.

The façade of the Church of San Zaccaria is generally regarded as the best specimen of early Renaissance architecture in Venice. The first church on this site was erected in A. D. 817 by architects from Constantinople, the expense being born by Leo V. (an Armenian). Nuns of the Benedictine convent adjoining, originally charged with this church, presented every Doge with his ducal cap, and nearly all the Doges from 837 until 1172 found their last resting place in the original Church of San Zaccaria. Of the partial restoration of 1444 about all that remains is the Cappel la d'Oro (of St. Tarasio), with three famous tryptiches by Giovanni d'Alemaña and Antonio Vivarini. The existing church was erected between 1456 and 1515, mainly by Martino Lombardo, who retained the old apse. The former Benedictine convent adjoining was established at an early date, and women of the noblest families of Venice embraced the religious life in this community. By their inherited wealth these nuns of noble birth contributed to the revenue of the convent, and their munificence adorned the church in various ways. These intimate associations with the life of Venice did not save the convent from the fate which United Italy has meted out everywhere to conventual institutions. It is now a military barracks.

In view of the character of this church and its interesting history it is sad to see, here, also, menace of decay, if not ruin. Certainly all the frescoes of the apse, attributed, by Paoletti, to Nicolo Pizzolo, are going to ruin. Large cracks spread across the arch-vault, and the crossbeam, which held it, fell a year or two ago at the foot of the remarkable ancona, or reliquary, given by Helena Foscari to contain wood of the true cross. In the lateral nave injuries of a much more serious character appear, and, while some are easily seen from below, those who go higher will find ominous cracks in the transverse walls, from an inch to an inch and a half in width.

VARIOUS OTHER CHURCHES.

Many other churches need important repairs if the national government is to preserve to Venice her monuments of architecture and art. Thus, in the imposing votive church of Santa Maria della Salute, it is necessary to renew the windows and to reconstruct the second cupola. The island church of San Giorgio Maggiore, which adds so much to the general effect of Venice, particularly in sunset lights, requires repairs on the roof. Its well-known campanile, now affording the best view over the lagoons and islands to be had anywhere in Venice, needs strengthening. At the exquisite, early Renaissance church of Santa Maria del Miracoli (the beautiful work of Pietro Lombardo), it is necessary to reinforce all the wooden rib-work, or skeleton, of the dome over the choir. The roof of the imposing, though baroque, church of the Scalzi is

sadly in need of extensive repairs. When, not long since, the parish priest of the church of San Francesco della Vigna found the roof defective, in default of government aid, the priest found himself obliged to sell a precious velvet in order to raise seven thousand lire (\$1,400) to cover the cost of work that brooked no delay. Now it is necessary to spend much more to repair the heavy façade of Palladio and strengthen the bell-tower.

The early Christian basilica of Torcello, the mother-city in the beginnings of Venice, is familiar to those who have made any of the excursions from Venice itself. This intensely interesting church, or basilica, is now menaced by the dangerous condition of the campanile adjoining, in the north side of which an enormous fissure is visible. Both campanile and basilica are closed to visitors at present as a measure of precaution against possible loss of life.

The pictures in the first story of the Scuola di San Rocco, so fully described by Ruskin, Károlyi, and others, are considered in need of some such restoration as has been given to inferior, or less important ones, in the ground floor, and a prefectorial inquiry is pending in this matter. The churches of San Barnaba and San Giobbe are among those requiring structural repairs, and further details could be given.

In so far as the churches are concerned, it is well to remember that, at the unification of Italy, under the House of Savoy, the national government took possession of all the churches in the land (except two), styling them "national property." The two exceptions are the Roman basilicas of St. Peter and St. John Lateran, these only being left to the control and maintenance of the Pope. Prior to 1870 some of the religious orders were in a position to maintain the material fabric of the churches they had constructed or been helped to build, and which they served. But United Italy confiscated the entire real and personal property of nearly twenty-five hundred monasteries, convents, and communities of men and women, leaving them nothing, in property, of an ecclesiastical character that their orders could thenceforth claim as their own.

How the Italian government has executed the immense ecclesiastical trust, thus acquired, is evidenced by the condition of the churches of Venice and of many other places all over Italy, except where private generosity has been available, as at San Marco, in Venice, which would be in worse condition than it is but for the foundation of the Emperor of Austria; as at Siena, where a bequest of a former head of the Opera del Duomo has kept up the far-famed pavement of the Sienese Cathedral.

HOPE FOR THE FUTURE.

There is, however, some hope for the future of Venice, thanks to the collapse of the Campanile of San Marco. It fell, a vicarious sacrifice for the shortcomings of government officials, and, through its fall, other monuments will, perhaps, endure. Besides, Signor Nasi has raised the national Ministry of Public Instruction to a higher level of intelligence and efficiency than was ever attained by any of his predecessors. Minister Nasi has prepared a bill for presentation at the first session of Parliament carrying with it unusually large appropriations for Venice.

A happy inspiration having led the Hon. Nasi to confide the Regional office for the preservation of Venetian monuments to Commendatore Giacomo Boni, the latter has suggested the following sums as necessary to repairs that should be (to quote his own words) "radical, substantial, not superficial; both apparent and lasting."

The figures that follow indicate the measure of impairment and decay and the probable cost of needed repairs, as expressed in American money. These estimates are as given out, in the *Corriere della Sera*, by Signor Ojetti, my own conversation with Commendatore Boni having been held before the estimates were drawn up.

There will probably be required for the works, as outlined: Palace of the Doge, twenty-eight thousand dollars; Santi Giovanni e Paolo, about the same amount; Santa Maria Gloriosa dei Frari, twenty-four thousand dollars; San Zaccaria, eight thousand dollars; Santa Maria della Salute, twelve thousand dollars; San Giorgio Maggiore, thirty-six hundred dollars; Santa Maria Mater Domini, three thousand dollars; Santa Maria del Miracoli, twenty-four hundred dollars; San Barnaba and San Giobbe, ten thousand dollars for both; Church of the Scalzi, thirty-six hundred dollars; San Francesco della Vigna, nine thousand dollars. To repair the enormous rents in the campanile of the Cathedral of Torcello, four thousand dollars will be needed, this work being required to save the cathedral from an otherwise possible collapse of the bell-tower.

I have not included in this list the cost of repairs in the Cathedral of St. Mark, which will probably be delayed, either wholly or in part, from the Austrian foundation already mentioned. Neither have I mentioned the value of restoration of the old residences

of the Procurators of St. Mark's. Such restoration would be more comprehensive and radical if the projected scheme of expropriation, for public utility, should really be carried out.

The government has expressed a willingness to allow only sufficient funds for iron ties around the lower part of the leaning campanile of San Stefano, the only portion which, in Boni's eyes, presented any artistic value.

MEASUREMENT OF SOIL-SUBSIDENCE.

A general knowledge of the sea-levels of the past and the progressive lowering of the land for ages will furnish a groundwork of fact of immense value in accurately determining the measure of subsidence of the subsoil of Venice and the ratio of sinking in the foundation of architectural monuments.

Commendatore Boni has initiated interesting scientific studies to obtain just these data. He had already made similar studies for the Roman Forum and, generally, for the monuments of Rome. The ratio of sinking of the subsoil of Venice must be considered in the light of the level of the sea in the centuries that have passed. Scientific data, establishing this, can be found from indications in the primitive soils and upon the rocks. Observations will be made upon the cliffs of Istria and the dolomitic rocks of the Cadore. The present level has already been marked upon all Venetian monuments now endangered by soil-subsidence, or worthy of future observation. By standard marks, here and upon all the islands of the lagoons, periodical tests will clearly show the rate of subsidence in years to come.

DANGERS TO BE AVOIDED.

Many excellent suggestions are put forward by various persons toward avoiding future unnecessary impairment of existing buildings. It is rightly urged that the depth of dredging in the Grand Canal and in the side canals should be lessened materially, and careful examination made of such injury as has already resulted from this cause. It is suggested that some of the side canals could advantageously be filled up.

The authorities are urged not to disturb the upper crust of the soil of Venice with deep piping, or to introduce conduits of large caliber, such as those of the aqueduct, which have already wrought injury by the great excavations made. The importance is shown of avoiding any further tampering with the land in the adjustment of the new hygienic system of drainage, which system is, of course, excellent from a purely sanitary point of view.

It would be infinitely better for Venice if the small steamers on the Grand Canal could be done away with altogether, but they are now too well established, as a permanent institution, for their use to be discontinued. It is, however, of vital importance to the salvation of Venetian architecture from further destruction that the form of these steamboats and their motive mechanism be changed and their speed lessened. Otherwise their perpetual agitation of the waters will work irremediable mischief.

VENICE, ITALY.

THE BROWNSTONE DISTRICT IN NEW YORK.

At the time, says a writer in the *Architectural Record*, when brownstone began to be superseded, it looked as if the evidence of its supremacy during so many years would be always with us, for it was scarcely conceivable that all houses built of this material, which extends almost solidly from Twenty-third Street to beyond Eightieth Street on the east side, would ever be entirely destroyed to make room for business buildings. And, indeed, the time is still indefinitely distant when the old brownstone fronts, north of Thirty-fourth Street, particularly on the east side, will be displaced for any such purpose. But, fortunately, there are other causes as well, which are making for the destruction of these buildings, and the substitution in their place of more varied materials and more pleasing designs. It is on the east side, between Thirty-fourth and Eightieth Streets that brownstone particularly prevails, and it is just this section of the city in which economic conditions have become such recently as to encourage and justify a wholesale reconstruction. The price of a good site alone has advanced beyond the old value, both of the land and the building; at the same time the high-stoop brownstone dwellings are now in the way of being extremely unfashionable, both in design and plan; and a movement has set in which is gradually gathering momentum toward the substitution of reconstructed American basement dwellings for the old brownstone fronts. In some few cases the reconstruction has gone no further than the destruction of the stoop, the placing of the entrance on the ground floor, and the rearrangement of the interior, but for the most part people demand that the old houses shall be either utterly destroyed or subjected to such a drastic process of purging that every trace of the brownstone is removed. And the process of reconstruction is covering ground with the utmost rapidity. It extends from Lexington Avenue on the east to Sixth Avenue, and Central Park on the west.



The Household

MOTH CHESTS AND CLOSETS.

CAMPHOR and cedar chests, says a contemporary, are one department of household furnishings which, with all the modern improvements in manufacture, do not lessen in price. A good many made to order are provided with trays and compartments like a trunk. Others are made in the form of regular wardrobe closets. These are a convenient luxury and spare the systematic packing and overhauling involved every time a cedar chest is gone into. Formerly only householders with big establishments procured cedar chests, but since the average person's wardrobe has increased in cost and value, many medium-sized chests are bought. A number of the newer private houses have a cedar or camphor-lined storeroom built in one or more of the upper chambers. Others have cedar-lined closets included in the architect's plans, just as refrigerating arrangements are allowed for. The cedar-lined rooms and closets are costly.

CLOSET VENTILATION.

THE modern housekeeper, remarks the Evening Post, has learned that clothes-closets need ventilation quite as much as any part of the house. In the best of new houses this point is looked after by the architect, ventilation being introduced into the closets by various simple but efficient means. Where this is not the case, however, the doors should be left open for a time in the morning, quite as carefully as the sleeping rooms are aired. The readiness with which clothing absorbs close odors is realized when the tenement house washerwoman brings home the laundry. All the fried linen of the week's cooking seems sometimes to have been retained in the articles that have got their drying by the tenement kitchen fire.

An arrangement in the linen closet of a recently built house is suggestive. In lieu of wide, deep drawers sometimes provided to hold household linen, which are difficult to move when filled, the closet has deep shelves fitted with covers at the sides, which let down. In this way the linen was perfectly protected, and closed in to hold the perfume of the lavender sprinkled over it, and at the same time access to it was easy.

TABLE LINEN.

EVERY year, points out a recent writer, the patterns of tablecloths become more elaborate, although the modest polka dot and the fleur-de-lis have a certain steady popularity that never seems to wane. In fact, so attached do some persons become to these designs that they choose them almost exclusively. A slight variation is seen in the cloth closely dotted with small stars that have the effect of the polka dot. But aside from these designs, this year's linen is given over to large floral patterns, or to scrolls and stripes, while even the combination of stripes and flowers is to be found. Whether linen set the pace and wallpaper followed, or whether it was the other way around and the linen designers have taken up the ideas of the wall-paper designers, certain it is that there are points of resemblance between the new linens and the new art wall coverings. The very arrangement of the tulips, lilacs, chrysanthemums, and poppies is somehow suggestive of the most artistic of the wall-papers.

One new pattern that is more unusual than beautiful is a harvest time collection of wheat, cornflowers, and marguerites. Another new pattern is a very Frenchy arrangement of ostrich feathers, bow knots, and flowers. This design is on a square cloth for a square table. There is a distinction in this phraseology, for whereas a round cloth may only be used on a round table, some square cloths are for both, some for the square table alone. It all depends upon the arrangement of the pattern. If it finishes off toward the center in a circle, well and good, the cloth may be used without discrimination as to the shape of the board, but if the undecorated center of the cloth may be bounded by rectangular lines, the cloth is not to be selected for any but the angular table.

KITCHEN WOODWORK.

THE finish of the woodwork in the kitchen, points out the Housekeeper, should be without ledge or ornamentation to catch dust or dirt. Walls may be tiled or ceiled with hard wood, painted, covered with washable paper, or calcimined, if necessary, twice or more a year, at a small cost, and kept sweet and clean. The color is worthy of notice, also, a soft shade of green being most restful to the eyes.

MOUNT PLEASANT MANSION, IN FAIRMOUNT PARK, PHILADELPHIA, PA.

BY FRANCIS DURANDO NICHOLS.

ON page 3 will be found an illustration of Mount Pleasant Mansion in Fairmount Park, Philadelphia, Pa., which has been reproduced from a drawing made from sketches and measurements of the building by Henry Rausch, of New York.

Mount Pleasant Mansion was erected in 1761 by John McPherson, a merchant and a mariner of Philadelphia, and upon a site, now a part of Fairmount Park, commanding a magnificent view of the beautiful surrounding landscape and the Schuylkill River, which flows through this extensive park.

The building is a beautiful example of Colonial architecture of the Georgian period; the elevation shown is of the main front, which faces the east. The west elevation faces the Schuylkill River, and although being in its general lines similar to that of the east, the detail is simple. In approaching the mansion from the east one must go up a fine, broad road lined on either side by stately trees. The house is at the termination of this road, and to the west is a steep bank down to the river drive, which winds its course parallel with that of the river.

The handsome arched doorway, the three light windows above, the main cornice and pediment, the dormer windows, the balustrade on the roof and the architraves to the windows, and also the sills are all of wood painted a light gray. The astragals of the window sash are painted red. The flat arched window heads are of a light gray sandstone, while the sub-base to the building is of a darker shade. The four lines of the quoins and the band course at the second floor, and also the high, square chimneys, are of red brick, and stand out well from the cemented walls, which age has tinted very beautifully. The graceful flight of steps is of light gray sandstone.

The mansion is flanked on the north and south sides and a little to the east by small detached buildings, which were used for the kitchen and laundry purposes, and are of similar material as the main building. Still further to the east, and about as far apart as the two smaller buildings just referred to, are two large stone barns, the whole group having been laid out symmetrically.

After John McPherson had finished occupying the house, it became the property of Don Juan Miralles, the Spanish minister, and occupied by him until General Benedict Arnold bought the property as a present for his bride, a noted Philadelphia belle, who was reputed to be the most beautiful young lady of the Quaker City. It was at this time that General Arnold, having been placed by General Washington in command of that division of the Revolutionary Army which operated in the vicinity of Philadelphia, was a prominent figure in the inner circle of society of our first Capital. Through his extravagance, as is well known as a matter of history, and also animated by a spirit of revenge toward Washington, the attempted betrayal of West Point to the British occurred. Upon this, and under an Act of March 6, 1776, entitled "An Act for the Attainder of Traitors," Benedict Arnold's life estate in the property was forfeited, and was conveyed October 6, 1781, by Joseph Reed, President of the Supreme Executive Council of Pennsylvania, to Col. Richard Hanson.

In 1783 it became the property of Blair McClenahan, who in 1780 gave £10,000 to feed the starving Army of the Revolution. In this mansion also lived Baron von Steuben, Inspector General of the Army under General Washington.

In 1868 the city of Philadelphia took possession of the building, and it is now under the control of the Colonial Dames, who have established a small collection of interesting relics in its various rooms.

This house is only one of a group of old mansions which are scattered through Fairmount Park, and, though now within the city limits, they were, a century ago, the country seats of wealthy and noted Philadelphians. Most of these old time country seats are dotted along both banks of the Schuylkill River, and whenever possible were, of course, built overhanging the river or plain. Many a noted social event took place under these roofs, and though they are now deserted, there are, fortunately, a few persons who visit these old manor houses, and who love to linger and dwell in the eventful past of which these former houses were often the center.

THE architect's business is to plan and design the house; the owner's business is to live in it—supposing he is not a speculative builder. These are the two contracting parties to every building operation. The closer they come together the more successful the result.

HOUSEHOLD cleanliness is an essential of good living and right living. The secret of success is to be clean. Being clean and seeming to be clean are two very different things, as every wise housekeeper knows.



The Garden

BLUE HYDRANGEAS.

AN English gardener has prepared some useful notes on the cause or production of blue flowers in hydrangeas. A clear and decided blue color can with certainty be imparted to the flowers of *Hydrangea Hortensia* when grown in pots, he writes, by the addition of certain ingredients to the soil when potting, and afterward in the watering. The plants, after being grown from cuttings for two seasons in ordinary suitable soil, must then, to produce blue flowers, be taken out of the ground (or pots), and every particle of soil carefully washed off the roots. They are then to be potted in "a proper ferruginous compost," composed of sandy heath soil, with 10 per cent. iron slag, 3 per cent. sulphate of iron, and 5 per cent. dried night-soil. Or "instead of this may be employed 10 per cent. of pounded slate, 3 per cent. sulphate of iron, and 1 per cent. ammonia." The plants are to be watered twice a week with water in which from 36 to 48 grains (troy) of sulphate of iron has been dissolved. There follows a bracketed note by another writer explaining that the action of the pounded slate is due to the fact that slate contains from 25 per cent. to 35 per cent. of alumina, and from 6 per cent. to 12 per cent. of sulphuretted and oxide of iron. Adding that "it is owing to the combined presence of the sulphuretted and oxide of iron with alum that some argillaceous soils naturally produce the blue color in the *Hortensia* blooms."

HARDY PERENNIALS FOR EDGING BEDS.

THE new magazine, *Floral Life*—a welcome addition to the floral literature of the day—makes some helpful suggestions on edging beds of hardy perennials.

In places where a geometric design is used in the arrangement of flower beds, a formal edging, of box, grass, lavender, or other closely clipped edge, is almost necessary to preserve the outline. In these cases the edging is more in sympathy with the scheme of the landscape gardener than with the flowers, and is always more or less associated with what are termed Italian gardens, with their statuary, terraces, masonry, etc.

The more natural and pleasing way, especially in less pretentious gardens, is the one so often seen in cottage gardens in England and other places where gardening is done for the pleasure it brings rather than for show. Here may be seen walks bordered by pinks, pansies, *Phlox subulata*, London Pride, house-leeks, mignonette, daisies, Sweet Alyssum, and a host of other low growing, pretty little plants.

To help to keep the outline of the beds large pieces of broken stones, common in the district, are used. Half buried in the ground, the plants delight to creep among them, often completely covering them. To shallow rooted plants these stones are of great assistance, as they hold the moisture, and help to keep the ground cool during hot weather, and if removed a complete network of roots will often be seen right in contact with the stones. When such plants are used the edge is never very clearly defined, in comparison with box-edging and such like, but it is all the more in keeping with the plants they border.

There are many plants that can be used for the purpose: *Achillea tomentosa*, *Ajuga reptans*, *Arvensis*, *Brunella grandiflora*, *Cerastium tomentosum*, pinks in variety, Sweet William, *Erinus alpinus*, *Iris pumila*, *Sempervivum* of different kinds, *Phlox subulata*, *Arabis albidula*, and *Plumbago* *Larpenae*, are among the kinds that do well in this country; besides, many annuals, including Sweet Alyssum, Tufted Pansies (*Viola cornuta*), annual pinks, in fact any of the neat, low growing kinds.

THE WINDOW BOX AGAIN.

THE Municipal Art Society of New York has issued a helpful circular on the making and care of window boxes.

The plant most highly recommended is the rose pink ivy geranium, which grows like a weed and has an almost vinelike suppleness and grace. The nasturtium is another favorite. As to the boxes themselves they should have an outer cover of cork bark, should rest upon a layer of pebbles, which in turn should be set in a well drained zinc basin. The wooden bottom of the box should be perforated, and the plants, if exposed to a parching sun, should have their roots—but not their leaves—well watered daily at one o'clock.

Amateur attempts with window gardens are very apt to result disastrously unless the gardener is one of those gifted with a knowledge of plants and a knack of succeeding with them. But it is mistaken economy to attempt them without a proper knowledge



A COTTAGE DRAWING-ROOM.

A pretty suburban drawing-room is described by an enthusiastic visitor in a contemporary. It is simple, as befits its situation, but it has nothing of the country-bred maid about its attire. It reminds one rather of a dainty dame who, while donning her country dress, still keeps that touch of foreign grace which adds such piquancy to the homelier style. This *je ne sais quoi* of French grace is most clearly evident in the wall paper.

The pearl-white, moiré ground, paneled out with borders of blush pink roses and white arbutus blossoms, is arranged in conventional clusters and wreaths, which, though eminently decorative, still keep a charming grace of line. Here and there the rose clusters are tied together with little knots of pale blue ribbon, and the curtains—of white Sicilian alpaca, with a border to match the paper—are also tied back with narrow, pale blue bands.

The furniture is Sheraton, with the exception of two Louis Seize armchairs, which keep the wall paper in countenance. These two styles, both so ample and so elegant in proportion, go nicely together. The couch and large armchairs are covered in white wool damask, the smaller chairs only being adorned with silk covers. These are in narrow, pale blue and white striped silk, which has a very smart, piquant effect, and prevents the flat impression given by using delicate pink and blue of the same depth.

The footstools and one or two cushions are also of this stripe, the other cushions being in tender, blush pink silk; some with, some without, frilled muslin covers. The carpet is of a warm, stone white, several shades darker than the ground of the paper, and its long pile gives it a soft, silvery sheen. Light girandoles, with slender gilt frames, repeat the slight touches of gold on the French chairs, and over the mantelpiece an oval picture is hung, lockettwise, from the picture rail by a pale blue knotted ribbon.

The ornaments are chiefly delicate pink and white china, with here and there a quaint piece of old gilt glass.

SUBURBAN LIVING.

In order to come out even, says one who appears to have many qualifications of knowing, a person moving from a city apartment to a suburban house should effect an economy of about 25 per cent. in his rent account. If he has been paying \$80 a month for an apartment he would be wise in getting a house for \$60, and \$55 would be wiser still. There will be other demands for that \$20 or \$25 which he, perhaps, has not foreseen.

The first and most immediate apparent item of additional expense will be the commuter's railroad ticket, costing from \$5 to \$10 a month, according to the distance from New York of the place where he has planted his vine and fig tree. In the same category will come the fifty-trip family ticket, and oh! how surprisingly often will it have to be renewed, for from \$5 to \$12, under the hankering of your wife and your daughters and their sisters and cousins and guests for a sight of the metropolis which they have abandoned.

COTTAGE CHINA.

The point in a miscellaneous collection, says a collector, is how to dispose of the heterogeneous assortment so that each piece may be given its fullest artistic value as an ornamental embodiment of form and color. The first thing to consider is whether the merit of the particular piece lies in its graceful shape of delicate workmanship or in the strong color, which will at once give character to its surroundings. A dainty bit of Lowestoft, a delicate Wedgwood jar, or a Dresden shepherdess will find its place most happily on mantelshelf or low *étagère*; while a bright-colored Vallaurus bowl can most effectively be set in a dark corner, where its color will do much in the way of brightening the feeling of somberness. Small, finely painted or modeled pieces should never be placed above the line of sight, although their position should be selected with due regard to their safety—a recognition of the fitness of ornament for the place it is to occupy being an elementary rule of decoration. Then, again, the piece of china should be in harmony with its environment; for example (an extreme instance, of course), one would not set a piece of Majolica on an Adam mantelpiece, while a delicate bit of Chelsea would look sadly forlorn on one of gray granite or black marble.

A RESIDENCE AT PLAINFIELD, N. J.

The residence shown on the cover and on pages 4 and 5 has been erected for George A. Strong, Esq., at Plainfield, N. J.

The building is designed in the Colonial style. It has two swell bay windows at the front, as well as a porch and terrace. The underpinning is built of rock-faced gray stone, and the superstructure of buff brick laid in buff mortar. The trimmings are painted white. The roof is covered with shingles and stained a dull shade of green. The chimneys are built the same as the main part of the house. Dimensions: Front, 70 ft.; side, 70 ft., not including porches and porte-cochère. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The plan shows a central hall, which is trimmed with mahogany and has a paneled wainscoting, a beamed ceiling, and a broad, sweeping staircase, with a newel-post formed of a cluster of spindle balusters. The reception hall, directly off from the hall, is trimmed with mahogany, and has a low paneled wainscoting, a beamed ceiling, and a wooden cornice. The fireplace has a tiled hearth and facings, and a mantel of handsome design, with a shelf supported on carved brackets. The sun room is an attractive feature of the reception hall. The drawing-room is trimmed with white pine treated with white enamel. It has an attractive nook, separated by an archway, and it also has an open fireplace fitted with Mexican onyx facings and hearth, and a mantel of Colonial style and of dainty design. The living-room is trimmed with oak, and has bookcases built in, and also a book alcove, and a fireplace furnished with a tiled hearth and facings, and a mantel with cabinets built in on either side of the same. The den is finished in forest green, and has an angle-nook, with a dropped ceiling, which is beamed, and which contains an open fireplace built of Roman brick, with the facings and a hearth of the same, and a mantelshelf supported on corbel brackets. There are seats on either side and bookcases built in. The dining-room is trimmed with white pine and is treated with white enamel. There is a paneled wainscoting to the height of five feet, and a wood cornice. The china closet in the corner opposite the fireplace has ledged glass doors. The fireplace has a hearth and facings of Mexican onyx, and a Colonial mantel. The butler's pantry is fitted with dressers, bowl, drawers, and store pantry, and is trimmed with North Carolina pine.

The rear hall and porte-cochère entrance are a feature of the house. The coat closet and lavatory are also a convenience. The kitchen is trimmed with North Carolina pine, and is provided with a range, closet, servants' hall, dresser, sink, and a lobby large enough to admit an ice box.

The second floor throughout is trimmed with white pine and is treated with ivory white paint. This floor contains four bedrooms, dressing-room, linen closet, and a bathroom. Each of the bedrooms are provided with open fireplace and lavatory. The bathroom has a tiled wainscoting and a paved floor, and contains porcelain fixtures and exposed nickelplated plumbing. This floor also contains a private hall, two bedrooms, and a bathroom, with a stairway to the first floor for the servant quarters.

The third floor contains four bedrooms and a bathroom. A cellar, cemented, contains a furnace, laundry, fuel room, and cold storage. Messrs. Rossiter and Wright, architects, 94 Liberty Street, New York.

SOME FIELDSTONE FIREPLACES.

FIREPLACES of fieldstone have a certain attractiveness when the places in which they are put are designed especially for them, and when they fit into their immediate surroundings. When well done they are often highly attractive; when they are not well done, it were better they had not been built. Their effectiveness depends so much on their environment that it is difficult to judge of them when considered apart and by themselves.

Three illustrations of fieldstone fireplaces are shown on page 7. One is from the "Anchorage," the summer home of J. Percy Bartram, Esq., Black Rock, Conn., Mr. Francis Durando Nichols, architect, 2425 Fairfield Avenue, Bridgeport, Conn.; another is from the house of G. W. Goodsell, Esq., at Woodmont, Conn.; the third example is from the residence of A. M. Young, Esq., at Pine Orchard, Conn., Messrs. Griggs & Hunt, architects, Waterbury, Conn.

A FORMAL GARDEN.

THE illustrations on page 11 afford some picturesque glimpses into the formal garden of the estate of Bigelow Williams, Esq., at Nantucket, Mass. It is enclosed within high walls and screens, effectively shutting out outside vistas, and giving an unusual completeness and homogeneity to the place. The plan is a comparatively simple one, as the general view shows. The architectural adjuncts are likewise simple and restrained, and, very wisely for a garden of this size and situation, confined chiefly to the bounding walls and the house.



NEW MODES AND METHODS.

ONE of the most delightful wall papers of the season, says an exchange, is one copied from a French paper originally on the walls of an old Salem house and known to have been there for over one hundred years. It is a beautiful paper with landscapes and flowers, twenty-eight different colors in all, and that means much when it is understood that every color must be put on with a different block when the paper is made.

This is the wall paper which will be seen on the walls of rooms in some of the houses of Colonial design in Newport this summer. The paper is brilliant in effect, with many bright colored flowers, beautiful pink hollyhocks in a warm rose shade, purple morning glories, clusters of other purple flowers, blue flowers, and two different water scenes which seem to be set deep into the mass of gay blossoms, the scenes themselves of most delicate tones and with a wonderful perspective. The original paper was so old that it was found, upon removing it, that it was made in pieces twenty inches wide by twenty-eight inches long, the manufacturers of that day not understanding the art of making paper in long rolls. The reproduction is an expensive paper, as the original was, and costs \$6 a roll.

Landscape papers which are not reproductions, made in panels of flowers and trees, are also among the new designs, and they are delightfully rich and effective. The paper is made in separate sheets and of extra width, the different pieces matching to form a complete picture around the room. One of these sheets, for instance, will show a mass of green foliage, a high wall beneath, and a small bench by the side of the wall. The landscape sheets are also used in conjunction with paper made to represent plain panels, with which the landscape scenes alternate.

Papers of this kind are used in dining rooms, in libraries, in halls, and foyers. They are sold at so much a large sheet, and one of the sheets will cost \$5.

Greens are the colors of the season, pale greens as a rule, and every effort is made to get away from the heavy, solid colors that have been used for wall papers. The colors now used in addition to greens are brown and yellow, and they are popular in the order named. Moiré papers are much used, though possibly not as much as last year, and are to be found in all delicate colors.

For the drawing-rooms there are the two-toned papers, in stripes and small figures, and in some instances with the figures, and frequently large figures, over the stripes. For the sleeping rooms there are the flower papers always, and the trellis papers are still popular, the best showing the smaller trellis. This paper is carried over the ceiling, and roses are more generally liked than other flowers.

There are innumerable things designed specially for bedroom papers. A German paper which was made for New York has a robin's egg blue ground and large flowers and ferns in queer, soft green and blues covering it well. It is an odd paper, but very pretty. Another paper which was designed for bedrooms and which is new has a pale blue ground, and upon it clusters of big pansies of a rich plum color, these joined by festoons of white lace.

A paper which is simple, in good taste, and which will allow pictures upon it, something that is not considered in the decorations of most wall papers, is called a grass paper. Closely set undulating narrow lines, a regular grass effect, cover the entire paper, in green, which is best, or in blues or any colors one may wish. To go with this paper is another having the same grasses, but closely set over them a round, conventional flower. This is used as a frieze to the room with the plain grass paper and carried up over the ceiling.

In odd, soft pink tones is a paper which has a design of flowers which seem to be water lilies about the natural size and set close together. The frieze to this shows more of the lilies, but smaller, crowded close together in the foreground, gradually fading away into the plain pink where it joins the ceiling paper. Friezes with many papers are lighter and more delicate in effect than the papers seeming to shade off into the ceiling. Domestic papers which are made after French designs and which are pretty and neat have narrow flower and plain stripes, the latter crossed by hair lines. Delicate colors, yellows, blues, and pinks, appear in these.

For the dressing-room there are more individual papers, and they are frequently more elaborate and richer in effect. The moiré papers are sometimes used, and an odd art nouveau paper is one which has been used for the decoration of one pretty dressing-room with good effect.

Legal Notes

CONTRACTOR'S DEFAULT.

WHERE a building contract authorized the owner to take possession of the work and complete the same on the contractor's default, such provision was a privilege of the owner, and not a duty which he owed to the contractor, and his failure to exercise the same did not constitute a waiver of the contractor's default. *Mitchell vs. Williams*, 80 N. Y. Supp. 864.

CONTRACT PROVIDING FOR PAYMENT IN NOTES.

UNDER the mechanic's lien law of 1895, providing that no lien shall be created under it, if the time stipulated for payment is beyond one year from the time provided for the completion of the work, no lien arises from a contract stipulation for payment by notes, some of which run for years beyond the time stipulated for the completion of the work. *Vanderpoel vs. Knight*, 102 (Ill.) App. 596.

CONTRACT WITH ONE IN POSSESSION.

UNDER Missouri statute providing that a person furnishing material or labor for a building or improvement on lands under contract with the owner or proprietor shall have a lien upon such improvements, and upon the land belonging to such owner or proprietor, on which the same is situated, to the extent of all right, title, or interest of the owner or proprietor of the building, a lien may be enforced against the land by one who furnishes material for a building pursuant to contract with a person in possession under a written contract for a conveyance on payment of the purchase price, provided the lien can be enforced during the life of the contract. *Sawyer-Austin Lumber Co. vs. Clark et al.*, 73 S. W. Rep. (Mo.) 137.

FURNISHING MATERIAL.

A TRANSACTION whereby a lumber dealer agreed to furnish finishing material according to the builder's plans and specifications, which specified that all material must be thoroughly kiln-dried, hand-smoothed, and scraped, was not a mere sale on inspection, but was in the nature of a building contract, obligating the dealer to furnish and deliver the material according to such plans and specifications. *Utah Lumber Co. vs. James*, 71 Pac. Rep. (Utah) 986.

SUSPENSION BY OWNER.

WHERE a building contract provided that the work should be done to the owner's satisfaction in a perfect, workmanlike manner, and should be accepted by him, and after the work was finished the owner refused to accept it and pointed out defects to the contractor, which he made no attempt to remedy, the fact that the work was done under defendant's supervision during its progress was immaterial. *Mitchell vs. Williams*, 80 N. Y. Supp. 864.

LEASEHOLD INTEREST SUBJECT TO LIEN.

A MECHANIC'S lien attaches to a leasehold interest and to buildings erected by one tenant and sold to another, who has acquired a lease of the same interest, and this notwithstanding the removal of the buildings at the end of the term is expressly required by the lease. *Zabriskie vs. Greater American Exposition Co. et al.*, 93 N. W. Rep. (Neb.) 958.

WORKING ON PLATFORMS.

WHERE a servant is ordered to work on a platform built by another, it is the duty of the master, as between himself and the servant, to see that such platform is securely and safely supported for the work required to be done. *John S. Metcalf Co. vs. Nystedt*, 102 (Ill.) App. 71.

PERSONAL INJURY—NOTICE OF DANGER.

THE presence of a fellow employee in a doorway, apparently for the purpose of removing the door, and being actually engaged in doing so, is not notice to one coming there that the stairs inside the door have been removed, so as to make him negligent, as matter of law, in not heeding such warning. *Preuschoff vs. B. Stroh Brewing Co.*, 93 N. W. Rep. (Mich.) 945.

OWNER'S INTERFERENCE WITH WORK.

A CONTRACTOR for erection of a building, who, not being at fault, is prevented by the owner from completing it, may recover on a quantum meruit for work done. *Day vs. Elsele et al.*, 78 N. Y. Supp. 396.

A DESERT CATHEDRAL.

BY CHARLES F. HOLDER.

A CATHEDRAL it is not, in the strict sense of the word, yet certainly no building in the West impresses the observer open to impression as does the mission San Xavier del Bac, named by Fray Eusebius Kino in 1700. It is a fine old pile—artistic, beautiful, a sumptuous structure standing on the desert of Arizona. If the visitor to the latter did not know of the existence of San Xavier and should come upon it when bathed in the soft light that comes about sundown, he might well imagine that here was some magic creation, some palace transported from far Cathay by the genii and dropped down at the bidding of the owner of the lamp in an inhospitable region, as here in a desert, with only a village of Papagoes in the foreground, is a building so slightly, so really beautiful that it might well challenge admiration. It is one link of the great ecclesiastical chain begun by the Franciscans on the western coast of America, and the only one in Arizona to-day that is in a fair state of preservation.

San Xavier stands on the desert about nine miles from Tucson on the site of the old rancheria of the Sobalruri Indians. Kino visited the place in 1692, and in 1700, May 5, he founded the mission, giving it the name it now bears. This building fell to decay, but was replaced by the present edifice in 1783, its completion being celebrated in 1797. The original building was a small affair resembling in no sense the present imposing structure, which, while beautiful in itself, gains by its isolation and environment, which is a typical desert. At Tucson the traveler first meets the Papago Indians, who support the mission and who are earnest Catholics. They are extremely picturesque and are makers of the shapely jars so common in Arizona and whose pieces are found along the talus of many a mesa and buried in the adobe ruins all over the Territory.

The old mission stands up against the mountains, and consists of not merely the church with its tower and dome, but a collection of buildings for various purposes, among which is an Indian school under the care of the Sisters of St. Joseph. Out on the plain is the Papago village with its huts, where are the descendants of the people who have lived here and owned the land for untold years. In its decoration the mission is extremely rich and ornate, its ornamentation being peculiarly Franciscan. Over the door is an artistic scroll and on either side images of the saints, about three feet in height, standing in niches, beneath a stucco scroll. Over the door is a portico from which a door leads to the interior, and over this a conventional shell of the tridacna class giving a fine effect. On either side of this portico are niches containing images of saints, the decoration above that below being similar. Over this rises the mass of scrolling shown in the accompanying photograph. The observer regrets to notice evidences of decay and despoliation here and there. On the left of the roof rises a fine tower, pierced for the belfry, while another is incomplete. Back of this is the dome.

If the visitor is charmed with the exterior of this desert expression of Franciscan architecture, what can be said of the interior, which exceeds in beauty any of the missions of the Pacific coast, possessing great arches, frescoed ceilings, and walls covered with pictures of the saints? Some of the work is, of course, barbaric, but the general effect appeals at once to the eye and doubtless has an effect upon the Papagoes, who are the principal worshippers.

The general shape of the mission is that of a cross. As the visitor passes from the dazzling sunshine of the Arizona desert into the building the contrast is remarkable, and doubtless awe-inspiring to the Papagoes. A mass of gilt, fresco, and carving greets the eye altogether inconsistent with the squalid appearance of the Papago town and the desert beyond. Such a structure in the natural order of events should have a large subsidiary country to draw upon, but San Xavier stands alone, the little Indian town having the most interesting mission church in America. The arches of the church are extremely beautiful, the bases bearing statues of the twelve apostles. The principal altar—there are several—is dedicated to San Xavier, and bears many ornaments and small statues of saints, the Virgin, and representations of the Holy Family.

It is impossible to describe here in detail the interior decoration of this attractive old pile, but some idea of its value and interest from an architectural point can be gained from the illustrations on page 15, by Mr. Putnam, of Los Angeles.

KITCHEN FLOORS.

Floors may be tiled or hard wood oiled, finished with a quarter round at junction of floor and mop boards, thus closing up all cracks and crevices where vermin may lodge and become an intolerable pest. Or, if floor is old and can not be kept clean without great waste of time and labor, it may be covered with linoleum, which may be selected in harmony with tinting of walls and shades.

The Houseboat

A WOMAN'S EXPERIENCE.

A CONTEMPORARY prints an entertaining account of a woman's adventures with a houseboat, from which the following extracts are taken:

We set out to get the cheapest kind of a houseboat made, said the houseboat lady. We had heard glowing tales of old canalboats rejuvenated into efficient houseboats. We went over on the Jersey shore somewhere and looked at some old D., L. & W. canalboats; they asked \$100 apiece for them. We both knew something about boats, and something about the waters round about, and we knew that one storm such as we catch sometimes would knock one of those old canalboats to pieces. We pinched every dollar we put in her, but she cost us \$500 by the time she was furnished and in place. She's 44 by 14, and has four rooms.

We paid \$35 for a Livingston mooring. Everybody isn't willing to do that. But we like to feel when we go to sleep that we will wake up in the same place, and Jack confesses to a sneaking preference for finding me and the boat where he left us in the morning, when he gets home at night.

The old-fashioned anchor drags if it turns over. The one we use sinks ten feet in the sand and stays there till kingdom come. Even when you find your boat in place upon your return from business you can't always get to it. If it's stormy and the waves are running high, you can't row out. Twice last summer Jack spent the night at the hotel on shore, and I stayed alone in the houseboat. And I shall never forget the concentrated rage and despair that settled in my heart one day when I had been away for several hours, and there was no one on board. I rowed out alone and tried to pull my boat up to the steps of the houseboat and hold it there while I got on board. But every time I tried it that houseboat would sheer away with the swirl of the water, with a malevolence fairly human. I tried for one hour to board that fendish boat, and then I rowed back to shore and waited two hours for the tide to get out.

Housekeeping on a houseboat also reveals features of interest not hitherto discovered in other forms of the art. There is no cellar, of course, and you can't always get ice for the refrigerator. You use a gasoline or kerosene stove; that is, you use it if you are lucky. I remember once we didn't light a stove or a lamp for three days. The boat was rocking all the time so that there was too much risk of their overturning. And they can't be fastened tight because you must be ready to pitch them overboard any time they do catch on fire. During those three days, I recollect, no one came out from shore with supplies, because of the high seas, and for the same reason, of course, we could not row in after any.

But I have not told you the worst about the houseboat. That's the constant motion of the water. Night and day it never ceases. It finishes any ordinary land-lubber in a week. But I was born on the coast and raised in a boat. I'm never sick, and there's hardly anything about the sea I can't extract some enjoyment from. Then it lends a sort of atmosphere of adventure to the summer, you know. There's a sort of interest in finding whether the boat is there or not when you get back. Her vagaries make something to think about and talk about. We fill up nearly every evening with discussions of the way "she" is acting. Every time there is a storm we get tearing mad.

We enjoy the all summer picnic. Men have more of that in them than women, and a woman has got to have a strain of it in her in order to stand houseboat life. She has got to be a good sailor. She has got to know how to handle a rowboat, for she will have to go ashore almost daily for her various household needs.

I revel in the fact that I have no spring dressmaker to enslave me. Not a single summer dress have I to make. My old short skirt and shirtwaist and bathing suit are ready for another season. I revel in the thought that I shall have no toilets to make, no people to see, no doorbell. Some houseboaters anchor near the hotels, and can have music and dancing every evening. To escape the same we go further away. You have to walk fully half a mile from the station, and sometimes it's a hot walk, and sometimes it's a wet one. But it's good for Jack, and he wouldn't do it if he didn't have to. And there's a good sandy bottom for swimming. Of course, if money's no object, you can houseboat in style. One houseboater in our colony kept a Jap at \$15 a week, had guests from town, and a regular course dinner every night, and lived to correspond.



PLUMBING A TOWN HOUSE.

THE Plumbers' Trade Journal summarizes the plumbing work installed in three New York City residences which afford good types of recent workmanship.

The galvanized cellar sinks are 18 x 36, with open strainers and overflow set on iron pipe frames and supplied with hot and cold water through ½-inch galvanized branches, ½-inch finished brass compression hose bibbs and waste through 2-inch lead trap waste and 1½-inch vent.

Kitchen sinks are 24 x 42 imperial porcelain roll rim, supplied with hot and cold water through ¾-inch galvanized branches behind the tile and have nickel-plated ¾-inch Fuller bibbs and waste through 2-inch nickelplated plug and strainer, 2-inch nickelplated brass pipe and a 2-inch trap to floor.

The washtubs are supplied with hot and cold water through ¾-inch galvanized branches run on wall above tubs, with ¾-inch long shank Fuller wash tray cock, and waste through 2-inch lead trap and waste with 1½-inch vent.

The servants' closets are front outlet washout combination, seat attachments, nickelplated hinges, oak seat and cover, brass floor plates, nickelplated bolts and washers, slate platform, width of space with back and sides 16 inches high. The cistern is an 8-gallon copper-lined plain siphon, supplied through ½-inch galvanized pipe and 1¼-inch lead flush pipe. The basement and fifth floor basins are 16-inch round wing basins, with Italian marble countersunk slabs 12 x ¾-inch backs, 6-inch aprons on fifth floor, supplied with hot and cold water through ½-inch galvanized and ½-inch AA branches, No. 1 nickelplated compression basin cocks and waste through nickel-plated plugs and couplings, 1½-inch lead trap waste, and 1½-inch vent.

The ground floor basins are porcelain, oval, and secured to 1½-inch Italian marble (countersunk) with 12 x ¾-inch backs and ends. Aprons are 6 x ¾-inch. These basins are supplied with hot and cold water through ½-inch AA lead and ¾-inch nickelplated branches from floor up, with Fuller basin cocks, waste through unique and 1½-inch half S nickelplated trap. All exposed pipes are nickelplated.

The pantry sinks are imperial porcelain, 20 x 30 x 9 inches, with Italian marble back, 16 inches high, and supplied with hot and cold water through ½-inch AA lead branches and are nickelplated Fuller pantry cocks and cold water vent.

The basins on second floor are supplied with hot and cold water through ½-inch N. P. brass angle branches and nickelplated unique waste, and 1½-inch brass trap to wall.

The bathtubs on second floor are Greco-Roman Imperial baths, with nickelplated unique waste and bell supplies. Waste through a 2-inch trap. Bathtubs on third and fourth floors are Perfecto baths.

Basins.—Third and fourth floors are porcelain, 15 x 19, oval, secured to slab of Italian marble, 1¼-inch, which is countersunk, the backs being 12 x ¾-inch, having 6 x ¾-inch aprons, all supplied with hot and cold water through ½-inch AA lead and ¾-inch nickel-plated branches from floor up, with nickelplated basin cocks and waste through ½-inch half S nickel trap to wall. These basins have unique waste and basin cocks, same as on second floor. Behind the second and third floor bathtubs are connections for shower combinations.

Fifth floor water closets are the F. O. washout combinations, brass floor plates. The cistern is an 8-gallon copper-lined siphon, with a 1¼-inch lead pipe and ½-inch galvanized supply. Stop sink on fifth floor is the Marlborough No. 33 siphon jet stop sinks, with tank and lead flush pipes, with ¾-inch galvanized supply pipes, with extensive cocks behind plaster.

The Croton supply from the street is inside the cellar wall, and from the main stopcock there runs a ½-inch galvanized supply on the cellar ceiling, with ½-inch branches to cellar sinks and ¼-inch branches to hot water boilers. There also runs a ¼-inch branch in cellar to steam boilers.

Just inside the main stopcock there runs to supply pump a 1½-inch galvanized pipe. On the main house side of pump connection is a check valve. The pipe to tank is 1½-inch galvanized iron, with ½-inch tell-tale return to cellar sink. From the tank on the roof to the hot water boilers in the cellar there runs 1¼-inch galvanized pipe to supply the same. There are separate lines for cold water from roof tank, and for hot water from boilers in cellar to needle baths in second story main bathrooms, with 1¼-inch valves to control the same.

Connecting with street supply is a 1-inch galvanized pipe, which runs alongside of each line of fixtures, having dividing stopcocks on each floor, so that street or tank water can be supplied at will. The hot water risers from boiler are 1-inch galvanized pipe having ¾-inch circulation pipes back to bottom of boilers. Three-quarter-inch branches from the hot and cold water lines supply each set of fixtures on the different floors. These have nickelplated shut-off valves to shut off each set of fixtures. All rising lines have valves at bottom. Each line of pipe is controlled by 1-inch brass globe valve with ¾-inch drip pipes discharging through sediment waste from boiler to kitchen sink. The mains are hung on the ceiling and secured by galvanized iron hangers. For the refrigerators in the basement and butler's pantry there runs a 1½-inch galvanized safe waste, which discharges over the cellar sink through a flap valve.

A RESIDENCE AT ATLANTA, GA.

THE engravings shown on page 6 present a residence which has recently been erected for Alexander Smith, Esq., at Atlanta, Ga.

The building is treated with Colonial detail and a classic frieze as the cornice. It is constructed of gray brick veneer with white terra cotta trim and cornice. The roof is covered with slate. Dimensions: Front, 44 ft.; side 80 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The principal rooms on the first floor are trimmed with oak. The hall is treated in the form of a reception-room, and has a beamed ceiling, a paneled wainscoting, and a large open fireplace, furnished with a tiled hearth and facings, and a mantel of Colonial style with columns. The staircase is of an unusual plan, for it is constructed with two short flights of steps from opposite directions to a landing, from which the stairs rise to the second floor. The drawing-room is treated in the Colonial style, and has a fireplace with tiled facings and a hearth of white enamel tile, and a mantel of Colonial style with columns and mirror. The library is furnished with bookcases built in, and an open fireplace. The dining-room is finished with dark Flemish oak, and has a paneled wainscoting, ceiling beams, an alcove for the buffet, and an open fireplace provided with tiled facings and a hearth, and a mantel. The butler's pantry and storeroom are well fitted up with the best modern convenience. This house has the usual feature of a modern Southern home, in having a passage between the butler's pantry and the kitchen, which is in itself practically a detached building. The kitchen is provided with a dresser, sink, range, and laundry tubs complete. There is also on this floor a bedroom and bathroom attached, which is furnished with an open fireplace, tiled wainscoting and floor, porcelain fixtures, and exposed plumbing.

The second floor is treated with white enamel paint, and contains five bedrooms, dressing-room, linen closets, ample, well fitted closets, and a bathroom, the latter being provided with an open fireplace, porcelain fixtures, and exposed nickelplated plumbing. The floor is paved with unglazed tile, while the walls have a glazed tiled wainscoting.

The servants' room and trunk room are located on the third floor. A cemented cellar contains a furnace, fuel bins, etc. Cost \$12,000 complete. Messrs. Bleckley & Tyler, architects, English American Building, Atlanta, Ga.

A GARDENER'S COTTAGE AT PINE ORCHARD, CONN.

ON page 12 is an illustration for a gardener's cottage which has been erected for A. M. Young, Esq., at Pine Orchard, Conn.

The design is an attractive one of the gambrelled roof order. The underpinning and first story are built of fieldstone laid up at random. The columns of piazza are of similar stone. The gables are covered with shingles and stained a deep red. The roof is also covered with shingles and stained a dull green. The trimmings are painted cream white. Dimensions: Front, 28 ft.; side, 32 ft., exclusive of porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.

The interior throughout is trimmed with North Carolina pine. The living-room occupies the entire front of the house, and contains an open fireplace built of fieldstones and a staircase of ornamental character. The dining-room is conveniently heated, and the kitchen is well placed. The pantries are well fitted up.

The second story contains four bedrooms, large closets, and a bathroom; the latter is wainscoted and furnished with porcelain fixtures and exposed nickel-plated plumbing. A cemented cellar contains a furnace and fuel rooms. Messrs. Griggs & Hunt, architects, Waterbury, Conn., and New York City.

EVERY ornament has a use in being ornamental. That is quite as essential as the utmost utility. So do not throw out beautiful things because they are not useful. Beauty helps the house all the time.



The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the *Scientific American Building Monthly* by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

TILING	T. F. Furness, Philadelphia, Pa.	May 5,	33,313
FLOOR TILE	A. Plant, Keyport, N. J.	May 19,	728,290
BUILDING BRICK	E. H. Vordtriede, St. Louis, Mo.	May 26,	729,023
TILE FLOORING	C. P. Capen, St. Louis, Mo.	May 26,	729,128

CARPETRY.

WINDOW	P. J. Hasselquist, Rhineclander, Wis.	May 5,	727,135
WINDOW	J. Horsfield, Chicago, Ill.	May 5,	727,366
WINDOW SASH JOINT	C. Mundel, Baltimore, Md.	May 19,	727,406
WINDOW	Charles Bickel, Newark, N. J.	May 12,	727,882
WEATHER STRIP	A. J. Kitson, Ann Arbor, Mich.	May 19,	728,244
WEATHER STRIP	Douden and Robb, Brooklyn, N. Y.	May 19,	728,086
REVOLVING WINDOW STRIP	H. E. Essig, Canton, Ohio	May 19,	728,690
WINDOW CORNER POST	P. Ebner, Columbus, Ohio	May 26,	728,885

CONSTRUCTION.

SIDEHILL BUILDING CONSTRUCTION	G. C. Scott, Columbus, Ohio	May 5,	726,998
CONSTRUCTION OF ARCHES	J. A. Drake, Halifax, Eng.	May 5,	727,110
CONSTRUCTION OF WALLS AND PARTITIONS FOR BUILDINGS OR OTHER STRUCTURES	W. F. Walker, Charleston, W. Va.	May 5,	727,234
CONSTRUCTION OF BUILDINGS	G. Y. Bonus, Chicago	May 19,	727,579
LOCK JOINT FOR COLUMNS	W. L. Taylor, Elmira, N. Y.	May 12,	727,862
EXPANDED METAL STRUCTURE	H. E. White, Niles, Ohio	May 19,	728,345
SEMI-PORTABLE BUILDING	J. Kulhanek, Prague, Austria	May 19,	728,471
PROVISIONAL OR PERMANENT WALL	J. Kulhanek, Prague, Austria	May 19,	728,472

ELEVATORS.

CONTROLLING MECHANISM FOR ELEVATORS	T. W. Heermans, Chicago, Ill.	May 19,	728,228
ELECTRIC ELEVATOR	F. B. Rae, Chicago, Ill.	May 19,	728,292
ELEVATOR APPARATUS	L. H. Venn, Yonkers, N. Y.	May 19,	728,338
ELEVATOR	A. C. Smith, New York, N. Y.	May 26,	729,433, 729,434

FIREPROOFING AND FIRE EXTINGUISHMENT.

CONSTRUCTION OF FIREPROOF FLOORS	T. A. Naylor, Baltimore, Md.	May 5,	727,187
FIREPROOF BUILDING CONSTRUCTION	E. P. S. Wright, Short Hills, N. J.	May 5,	727,250
FIREPROOF CONSTRUCTION	J. A. Holmboe, Louisville, Ky.	May 5,	727,364
AUTOMATIC FIRE EXTINGUISHER	R. W. Newton, Providence, R. I.	May 19,	728,280
FIREPROOF VEST AND METHOD OF MAKING SAME	J. L. Ferrell, Philadelphia, Pa.	May 19,	728,452
FIREPROOF FLOOR CONSTRUCTION	C. F. Buente, Allegheny, Pa.	May 26,	728,857
CEILING OR WALL CONSTRUCTION FOR FIREPROOF BUILDINGS	W. Horn, Chicago, Ill.	May 26,	728,919
FIREPROOF BUILDING STRUCTURE	Billinger and Kopczynski, Baltimore, Md.	May 26,	729,299
FIREPROOF WALL OR BUILDING	G. V. Pickin, Eau Claire, Wis.	May 26,	729,408

HARDWARE.

SASH FASTENER	H. Van Wie, San Francisco, Cal.	May 5,	727,036
AUTOMATIC DOOR CLOSING MECHANISM	W. A. Cross, Chicago, Ill.	May 5,	727,097
SASH FASTENER	C. H. Hook, Baltimore, Md.	May 12,	727,950
SASH FASTENER	F. Kellwerth, Cincinnati, Ohio	May 12,	727,968
SASH LOCK	J. Mac Vane, Riverdale, Ill.	May 12,	727,984
COMBINED LOCK AND LATCH	M. C. Patrick, Seattle, Wash.	May 19,	728,755
HINGE	B. Peterson, South Chicago, Ill.	May 26,	729,406

HEATING AND VENTILATION.

VENTILATOR	Foos and Muir, Washington, D. C.	May 19,	728,387
WINDOW VENTILATOR	T. T. Doll, Chicago, Ill.	May 19,	728,447
CLOSET VENTILATION	J. J. Donovan, Peekskill, N. Y.	May 19,	728,448

MISCELLANEOUS.

METALLIC ROOFING SHINGLE	H. E. Moomaw, Chattanooga, Tenn.	May 19,	727,179
MANTEL	J. E. Holben, Evans City, Pa.	May 12,	728,169
PAINT OR PROTECTIVE COMPOSITION	E. G. Bertrams, Paris, France	May 26,	729,258

PLUMBING.

WATER CLOSET FLUSHING APPARATUS	A. Kulhanek, Prague, Austria	May 19,	728,470
WATER CLOSET	F. Schub, Albany, N. Y.	May 19,	728,624
WATER CLOSET AND APPARATUS CONNECTION	C. F. Ryd, Chicago, Ill.	May 26,	728,985

TOOLS.

PLASTERERS' CORNER BEAD	L. Schuller, Chicago, Ill.	May 5,	727,463
PLUMB OR LEVEL	C. C. Hummel, Esq., Pa.	May 26,	729,347

MR. CHARLES H. ISRAELS ON THE APARTMENT HOTEL.

(Concluded from page 3.)

as of one's own rooms, is also fully eliminated. The resident in the apartment hotel has, in fact, only to spend money, and receive all the comforts of life without thought or care as to how it is done. Individual ice boxes are now a usual feature of these buildings, so that one may provide oneself with cool drinks or minor articles of food from one's own supplies.

"The planning problem involved in the design of the apartment hotel may be very briefly stated. It is to group two, three, or four rooms and the necessary baths around a private hall, upon which each room opens, and which is in turn reached from the public hall. These rooms must be arranged, if not at the front or back, around the fewest and largest interior courts obtainable. The amount of the public space within the building is reduced to the smallest limits, so that as much renting space can be had as possible. The most successful houses are now built with what may be termed interchangeable plans, so that the size of apartments can be added to or diminished. Modern systems of construction permit this to be done rapidly and cheaply. In addition to the refrigerator and other conveniences I have mentioned, small safes are now inserted in the best class of houses, together with a telephone service, while roof gardens are an agreeable feature of many of these buildings. One has, in fact, every possible convenience, necessity, and luxury. It remains only to pay the price, and the tenant has everything the architect can give him to make him happy.

"In a sense this may be an unnatural way of living; certainly it has little of the old-fashioned home life, and perhaps that life can never be old-fashioned or other than beautiful and helpful when lived in a wholesome way. But it is one of the conditions of modern living in New York. The architect's business is to better such houses as rapidly as he can, and I believe he is doing that to the utmost of his ability."

BARR FERREE.

A STONE RESIDENCE AT "LAWRENCE PARK," BRONXVILLE, N. Y.

The stone residence which is illustrated on pages 1, 8, and 9, has been completed for H. Ward Leonard, Esq., at "Lawrence Park," Bronxville, New York.

The building from the grade up to the peak is constructed of field boulders laid up at random, and the eaves, trimmings, sash, frames, etc., are painted ivory white. The roof is of selected low tone red slate. The dormers are of slate and green copper. Dimensions: Front, 71 ft.; side, 42 ft.; extension, 18 ft. 9 in. x 44 ft., exclusive of the porch and piazza. Height of ceilings: Cellar, 8 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The interior throughout is of Colonial detail. The hall is treated with ivory white and has a high paneled wainscoting, a paneled seat, and an ornamental staircase with turned Colonial balusters and a mahogany rail. The drawing-room is also treated with ivory white, and has a low paneled wainscoting, a paneled archway at the intersection of the bay window, and an ingle nook containing paneled seats and an open fireplace, with facings and a hearth of yellow tile. The entire floor of the ingle nook is of the same tile. The mantel-shelf is of classic design, and is supported on fluted columns of the Doric order. The library is trimmed with red brick and finished mahogany, and has a paneled wainscoting, bookcases built in, and an open fireplace with mottled green tiling for the facings and the hearth, and a mantel supported on columns. The dining-room is also trimmed with red brick and finished in mahogany. It has a paneled wainscoting and an open fireplace provided with tiled facings and a hearth and a mantel of massive design and handsomely carved. These living rooms have parquet floors. The butler's pantry is trimmed with North Carolina pine, and it has china closets with glass doors, dresser, drawers, and a sink. The kitchen is provided with North Carolina pine trim, a cement tile wainscoting, a range with hearth and a white enameled brick chimney breast, pantry, rear hall and stairway, etc.

The second floor contains four bedrooms, nine closets, linen closet, and two bathrooms, the latter having a tiled floor and a tiled wainscoting, and provided with porcelain fixtures and exposed nickelplated plumbing. The principal room has a fireplace, a boudoir separated from the room proper by a columned effect, and a private bathroom. The trim on this floor is painted white, and the doors are finished in mahogany. The hardware is of brass, and the knobs are of cut glass.

The second floor also contains a billiard-room, which is finished in forest green, and has a wainscoting and a fireplace built of fieldstone, and laid in a rough manner. The facings of this fireplace extend to the ceiling, and the fireplace, which is circular in its opening form, is placed up two feet above the floor level. There is a mantel-shelf supported on stone corbels.

There are three bedrooms and bath and ample storage space on the third floor. The cellar, cemented, contains a laundry, furnace, fuel room, and an automobile stable. Mr. W. W. Kent, of 1262 Broadway, New York, and William A. Bates, of 100 Broadway, New York, were associate architects.

A RESIDENCE AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

The illustrations shown on page 10 present a residence which has been erected for William A. Engeman, Esq., Prospect Park South, Brooklyn, N. Y. The principal characteristic of this house is that the main part of the building is in a circular form, which is supported on columns of Colonial style, and the whole crowned with a tower effect. The underpinning is built of pressed brick, which is laid on a stone foundation. The first story is constructed of similar brick, and the remainder of the building is covered with shingles on the exterior and stained a deep brownish green color. The trimmings are painted ivory white. The roof is covered with shingles and stained green with harmonious effect. Dimensions: Front, 42 ft.; side, 58 ft. 6 in., exclusive of piazza and porte-cochère. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

The entrance is into a vestibule, which is trimmed with antique oak, it has a mosaic tiled floor, a paneled wainscoting, and a domed ceiling, which is treated with gold. The hall is trimmed with antique oak. The staircase is of an ornamental character, and has a stained glass window at the stairway landing. The reception-room, which is circular in form, is treated in the Louis XV style, and has a handsome mantel, parquet floor, etc. The living-room, which is separated from the hall by an archway with column effect, is trimmed with antique oak. It has an ingle nook provided with a fireplace built of gray Roman brick with facings and a hearth of the same, and a paneled overmantel. There are paneled seats on either side, and over one there is a bookcase, while over the other is a cluster of lead stained glass windows. This ingle nook is separated by an archway supported on carved brackets. The dining-room is trimmed with oak, finished in Flemish style. The walls are covered with tapestry effect, and the ceiling is a miniature copy of the Haddon Hall dining-room. The fireplace has facings and a hearth built of gray Roman brick, and a mantel-shelf supported on carved corbeled brackets. The butler's pantry, trimmed with oak, is fitted with drawers, shelves, cupboards, and closet complete. The kitchen is also provided with all the necessary conveniences.

The second story contains five bedrooms, provided with good sized closets, and lavatories between the rooms. The bedrooms have white enameled trim, and the hall is finished in antique oak. The bathroom is fitted with a tiled floor and wainscoting, and is provided with porcelain fixtures and exposed nickelplated plumbing.

The third floor contains two servants' bedrooms and bath, trunk room, and a billiard-room treated in forest green. The cellar, cemented, has a furnace, fuel room, servants' water closet, and a cold storage room. Mr. J. J. Petit, architect, 11 East Thirty-third Street, New York.

A RESIDENCE AT SPRINGFIELD, MASS.

The residence which is illustrated on page 13 has been erected for W. L. Sadler, Esq., at Springfield, Mass.

The house is designed with Colonial detail. The underpinning is built of red brick and is laid in red mortar. The superstructure is of wood, and the exterior is covered with matched sheathing, good building paper, and clapboards laid four inches to the weather. This clapboarding is painted a Colonial yellow, and the trimmings are painted an ivory white. The roof is covered with shingles, and is stained a moss green. Dimensions: Front, 40 ft. 8 in.; side, 46 ft. 7 in., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The vestibule is trimmed with quartered oak, and has a paneled wainscoting and an oak floor. The hall and the reception-room, which are thrown into one room, are trimmed with quartered oak, and are provided with paneled wainscoting, 4 ft. 6 in. in height, and ceiling beams. The open fireplace is built of brick, and it has a tiled hearth and a facing of tiles rising up for the support of the mantel-shelf. The staircase is of handsome design with turned newel-posts, balusters, and rail of oak, and it starts from a broad landing, at the foot of which there is a broad paneled seat. The drawing-room is trimmed with white pine, and is treated with ivory white paint. The dining-room is trimmed with quartered oak, and has a paneled wainscoting 4 ft. 6 in. in height, and a bay window with seat. The butler's pantry is trimmed with white wood and is finished natural. It contains

a butler's bowl, drawers, cupboards, etc. The kitchen pantry is trimmed the same, and is furnished with drawers, cupboards, etc. The kitchen is trimmed with brown ash, and it has a hard pine floor. It contains a store closet, pot closet, sink, and an entry large enough to admit ice box. Underneath the stairway there is a lavatory.

The second floor contains an open hallway and three bedrooms, dressing-room, store room, and a bathroom. The bedroom over drawing-room is treated with white enamel, the one over the reception-room is trimmed with cherry, and the one over the dining-room with bird's-eye maple. The bedroom over the reception hall is provided with an open fireplace, fitted with a tiled hearth and facings and a mantel, and a dressing-room separated by an archway provided with a grille, and is furnished with a lavatory. The bathroom has a tiled floor and wainscoting, and is furnished with porcelain fixtures and exposed nickelplated plumbing.

The third floor contains the servant quarters and trunk room. A cemented cellar contains a furnace, fuel rooms, and a laundry. Mr. Louis F. Newman, architect, Elm Street, Springfield, Mass.

A DWELLING AT GLENWOOD, N. Y.

The engraving shown on page 14 has been reproduced from a photograph of a dwelling which has been erected for the Metropolitan Building Company at Glenwood, N. Y. The elevations are attractive, and the interior arrangement is good. The underpinning is built of rock-faced bluestone. The superstructure, of wood, is covered on the exterior with cedar shingles, and is stained a dark soft brown color; the trimmings are painted white. The roof is covered with shingles, and is stained a dark green color. Dimensions: Front, 40 ft.; side, 42 ft., exclusive of porches. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.; third, 8 ft.

The hall is a central one, and is trimmed with oak. The main staircase is a combination one with a connection to the kitchen stairway. The parlor is treated with white enamel paint. The sitting-room and dining-room are trimmed with oak, and the latter has a paneled wainscoting, and an open fireplace furnished with tiled facings and hearth, and a mantel. The floor of these apartments are laid with oak. The butler's pantry is fitted with cupboards, closets, drawers, bowl, etc. The kitchen is wainscoted with hard pine, and contains stone laundry tubs, range, with hearth, hot water boiler, and sink.

The second floor contains four bedrooms provided with ample closets and a bathroom furnished with porcelain fixtures and exposed nickelplated plumbing. The trim is painted white. The third floor contains two large bedrooms and a trunk room. The cellar is light, dry, grouted, and cemented, and it contains a furnace, fuel rooms, servants' closets, etc.

THE MODEL SERVANT.

The gaiety of nations, and incidentally the dullness of the warm spring season, has been increased by an alleged offer of a Chicago man to give the sum of \$1,000,000 on his death for an ideal servant. The person in question must love her vocation, be physically strong, clean, and good natured; be neat, prudent, know her place and be a diplomat; be always dignified; never make an error in table service; know at a glance the likes and dislikes of guests; never discuss household affairs with outsiders; be a good nurse, cook, and know something of dressmaking.

These qualifications are not usually found combined in one person, servant or otherwise, and it is doubtful if the family of the gentleman making this offer will be deprived of the sum he proposes to pay for his servant. It is stated that servants have been a particular hobby of the party in question, and very sumptuous accounts have been published of the provision he makes for those he already possesses.

The chairs in his servants' quarters are of solid mahogany, upholstered in silk tapestry or leather, and there are paintings on the walls. Some of the paintings are even handsomer than those in the owner's own home. The floors are of hard wood, covered with the best quality of rugs, and scattered about are palms, ferns, and other plants.

All periodicals and the new books are placed in the library. The sleeping-rooms are very large and airy. In each sleeping-room are two brass bedsteads.

Yet with all these attractions there has been much trouble in keeping servants, a majority of them leaving only to get married and establish homes of their own.

FIXING THINGS.

Nor every one is handy with tools, and yet a considerable amount of repairs and fixings is indispensable in every house, no matter how well built. Every household should know how to drive a nail and saw a board.



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THE growing demand for a wall covering which is washable has resulted in bringing on the market a new and improved article called "Sanitas." The surface of this cloth covering is perfectly smooth and highly favorable for easy, quick, and thorough washing, so that in the operation of cleaning very little time and exertion are spent. "Sanitas" is manufactured on a cotton fabric and finished in colors, in prints, plain colors and tiles, in dull, glazed and varnished effects. It is extensively claimed that "Sanitas" is the article par excellence for kitchen, pantry, bathroom, closet, and other walls where a durable and washable wall covering is desired on grounds of utility, neatness, beauty, health and economy. The plain effects are especially adapted to fresco work and ceilings, inasmuch as the character of the goods precludes the possibility of plaster stain, and hides all cracks in the wall, while the scope of the artistic designs is of such a wide extent that it is easy to select patterns and colors to accommodate the requirements of taste within any walls. As it is waterproof and vermin proof, hygienic conditions of the wall are assured. It is applied to walls like paper, and is inexpensive. Sanitas is manufactured by the Standard Table Oilcloth Company, No. 320 Broadway, New York, N. Y.

STRUCTURAL AND ARCHITECTURAL ENGINEERING.

THE New York School of Structural and Architectural Engineering is probably the only one which gives a student actual drafting-room practice from the time he enters. The course of study is laid out in such a way as to be of especial benefit to the architect, builder, or draftsman who has not had the advantage of a technical school education, and gives the student a thorough knowledge of the methods employed by the largest engineering firms in New York City. The evening classes give a man who is employed by day an opportunity to devote his evenings to study. The mail course consists of the same plans and studies as those given in the classes. Structural engineering is attracting the attention of the entire industrial world, and as a profession it opens up to the young man as honorable and a successful position as offered by any of the leading arts and sciences. It has been developed within a comparatively few years, and its rapid strides to the front of commercial activity have placed it on a plane with the most lucrative of callings. A casual glance at the scope of building operations started in all the centers of energy will readily convince the observer that the construction of modern edifices and public works has evolved from the primitive mason and carpenter style to the stage where applied scientific knowledge must step in to fill the requirements. The method of teaching in the school gives the student wishing to become a contractor in work in any part of the world a practical course with actual shop work from the first. He immediately begins such labor as would be required of him in the office of any large construction company and, at the same time, is enabled to attain the position of a structural engineer without taking lengthened courses in studies that are of no practical advantage in this particular ambition. The teachers are civil engineers, standing high and connected with leading contracting firms. They are practical, experienced men, and understand the modern methods of work. The structural course of study embraces twelve subjects, from arithmetic to structural design, and the ornamental course nine subjects, from arithmetic to graduating design. The address of the school is No. 168 West Twenty-third Street, New York, N. Y.

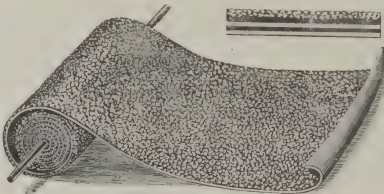
ENAMELED BATHS.

FORMERLY the unsanitary tin tub and the dangerous old style enclosed piping ranked as an extravagance. The present enameled ware bath, combining the purity of china and the durability of iron, is classed as a necessity. This revision of opinion is a notable feature in the evolution of baths, and is responsible for the presence of a bathroom in the smallest of flats and cottages and the provision of one or more for each floor in larger residences. Perfect sanitation in the bathroom is obtained by modern methods of work, and by the use of materials presenting a hard, smooth, and absolutely non-porous surface which will not craze or crack with long usage, a real saving is effected, for health is protected, house labor is minimized, and the need of repairs and reinstallation is far removed.

Practical information on this subject may be found in the illustrated catalogue of the Standard Sanitary Manufacturing Company, which manufactures complete furnishings for bathrooms. The catalogue contains views of seventeen bathrooms with furnishings varying in cost from the class adapted for the humblest home, through all grades to the magnificent equipments for the wealthy. Even if the bathroom is in the hands of the architect or the plumber, the suggestions of the experienced manufacturer as told in his directions, either as to scope or small details, are so carefully thought out that the owner, on studying them, will be very sure to be able to guard against any shortcomings or defects. These hints are very useful in reference to placing and spacing the main articles and accessories, as well as to decorations, in carrying out any desired color scheme. The booklet is issued and sent free on request to plumbers and dealers. The firm makes plumbing goods as well as the porcelain enameled iron baths, and the vast extent of its output may be well indicated by the statement that it has large works in Louisville, brass works in the same city, two separate works in Detroit of great capacity, and factories still larger at Allegheny and New Brighton, also works at Ellwood and Muncie, and offices, salesrooms, and warehouses in Louisville, Cleveland, New Orleans, and Pittsburgh. The company is also sending to plumbers and architects on request its catalogue on "Standard" High Grade Sanitary Woodwork and Porcelain Enameled Water Closets, the products of the Detroit plant; and a pamphlet illustrating the "Standard" Vimometer for use in office buildings, hotels, hospitals, schools, public and penal institutions. The address of the Standard Sanitary Manufacturing Company is Pittsburgh, Pa.

GRANITE ROOFING.

AFTER nearly twenty years of experience in the production of what is styled "perfected granite roofing," the Eastern Granite Roofing Company, of New York, has received the indorsement of many of the most prominent railroad officials, architects, builders, contractors, and superintendents of construction. This original stone-surfaced material, shown in the illustration, is scientifically made by skilled workmen on specially constructed machinery, and many buildings all over the United States can attest its enduring qualities after a service of ten or twelve years, with the roofs still in excellent condition, having required no expenditure for repairs. After the first rainstorm, water from this roofing is untainted, and can be used for drinking, household, and factory



GRANITE ROOFING.

purposes. It is one of the most attractive roofings made, and shows equally well as a siding. It is so simple in its application that any inexperienced workman can lay it quickly and properly by following the simple and complete instructions furnished with every shipment. In the important matter of fire insurance, we are informed that the rate for buildings covered with this roofing is the same as for tin or gravel. The best results are obtained by laying it on well-seasoned boards, although it can be put on over old tin, without removing the latter, simply by pounding down standing joints on lock-joint tin. Some interesting figures may be mentioned in reference to the vast output of this company's granite roofing industry. The new railroad shops at Readville, Mass., are covered with 260,000 square feet of this material; the stock yard buildings at East Buffalo, N. Y., with 400,000 square feet; the fine plant of the Niles Car Company, at Niles, Ohio, with 30,000 square feet, are among the largest roof areas. Twenty thousand square feet of roofing is the carrying capacity of one railroad car. Forty-eight railroad companies are using the roofing continually. Each roll contains 110 square feet, and is 41 feet 3 inches long by 32 inches wide. In laying, each roll covers 100 square feet of surface, allowing a uniform lap of three inches for horizontal joints. The weight per roll is 140 pounds. In order to facilitate the work of laying, the company supplies a special mop of a size which permits of being sent by mail. The new and extensive works of the Eastern Granite Roofing Company are equipped throughout with the latest improved machinery, invented by its own experts. The address is the Irving Building, West Broadway and Chambers Street, New York, N. Y.

SELF-CLEANING FILTERS.

In this article we illustrate a filter in which the filtering tubes are cleaned without taking apart, producing a new surface on stone and eliminating dirt after each filtration from the filter. The filtered and unfiltered waters do not come in contact. The stone tubes remain sealed until worn out, and are easily renewed at a small cost. It is called the "Acorn," and is a germ-proof device manufactured by T. Linke & Co., of No. 1559 Broadway, New York, N. Y. In its scientific mechanical construction, a wheel regulates the filter; it has spring metal cleaners, an outlet for unfiltered water, a valve seat for shutting off water, and a washered seat to close the outlet. The purpose in this natural stone tube filter is to overcome the imperfections of many devices of like nature,



"ACORN" FILTER.

and this is accomplished in a very original manner by the use of certain means for getting rid of refuse and by using materials that do not throw off fiber or absorb impurities. The carefully selected stone tubes used in the "Acorn" and other filters made by Linke & Co. are composed of 95 per cent. silicate, and under various tests are found to be impervious to all insoluble and suspended matter, and the capillary attraction, combined with pressure, makes the filter a very rapid one. The "Acorn" will filter from three to four gallons per hour; the double "Acorn" from five to seven gallons. Other filters from nine to one hundred and twenty gallons in the same time.

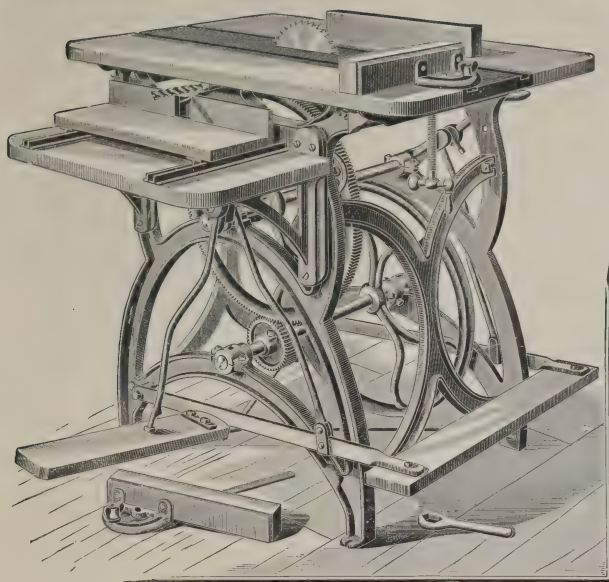
HOLLOW CONCRETE BUILDING BLOCKS MACHINERY.

AFTER experimenting unsuccessfully with a score of different constructions, Mr. Harmon S. Palmer, of Washington, D. C., has just invented two machines for manufacturing hollow concrete building blocks which give complete satisfaction. The machines are adapted to make corner bricks and bricks in which the exposed faces are arranged at different angles, as used for bay windows and similar structures, also to make bricks of the ordinary type. They provide such adjustments of the parts as to permit the manufacture of bricks in half, quarter, and other sections, and to vary the size of such bricks as may be required in length and width. It may be easily seen that concrete, being proof against fire, decay, and moisture, yet readily pliable for molding by the improved machinery described above, presents many advantages that architects and builders may profitably study and adopt. All the ornamentation needed to be given to the blocks costs but little, and they can be tinted any color, and to any depth desired, and they have been tested to stand a strain five times as great as the highest wall yet built would impose. In fact, the blocks are equal in lasting powers to granite, and require no more than ten or twelve hours to fit them for use in any construction. Having this desirable material and perfect molding machinery, it will be no surprise to the reader to learn that interested parties are trying to reap illicit benefits by encroaching on the interests owned by the company, of which Mr. Harmon S. Palmer is President. There probably never was a good thing started but that base imitations and infringements were at once attempted to be palmed off on the unsuspecting before they could be fortified with knowledge sufficient to distinguish between the genuine and the spurious. In regard to hollow concrete building blocks, architects and builders should be careful and investigate before allowing the use of any concrete blocks in their enterprises unless authorized by the Harmon S. Palmer Hollow Concrete Building Block Company, of Washington, D. C., owners of basic patents covering such machines, walls, and blocks. Suits against imitators and infringers have been entered in the Federal Courts in Brooklyn, N. Y., and in Jackson, Mich., and all parties violating the rights of the above named firm will be promptly prosecuted to the extent of the law. Disregard of this fair notice subjects infringers to litigations and their property to liens. The address of the company is No. 1401 Binney Street, Washington, D. C.

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WHITE wax, 2,500 parts; water, distilled, 4,500 parts; potassium carbonate, 25 parts; oil of turpentine, 4,000 parts. Boil the wax in 1,500 parts of the water, carrying the potassium carbonate, until the wax is saponified. Add sufficient water to replace that lost by evaporation, and stir till cold, and add, little by little, under constant agitation the oil of turpentine, and continue to stir until a complete emulsion is attained. Then add the remainder of water all at once and stir in. Smear the cream on a thin soft rag, and go over the furniture, then polish with a woolen cloth.—Oesterreichische Farb- und Lack Zeitung.

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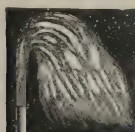
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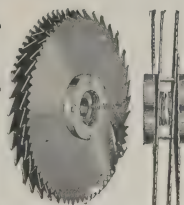
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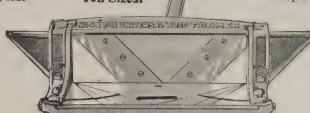


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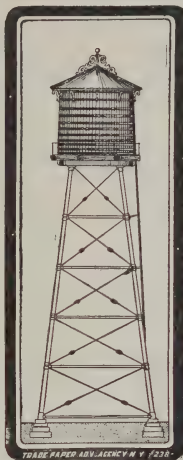
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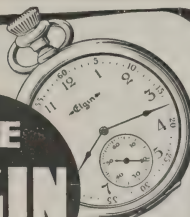
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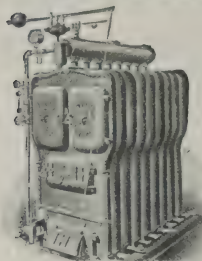
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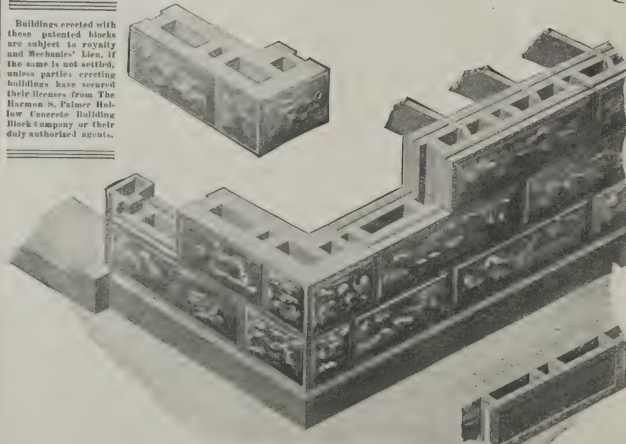
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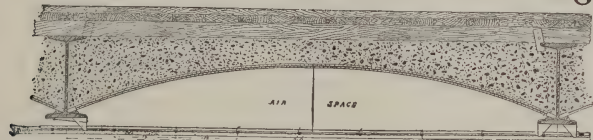
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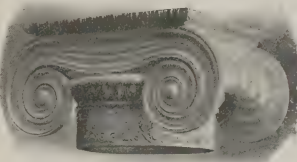
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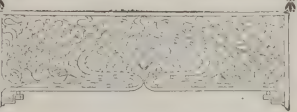
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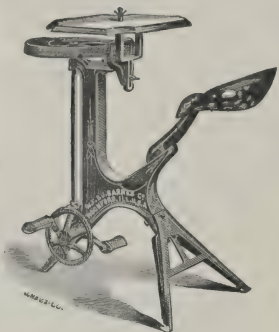
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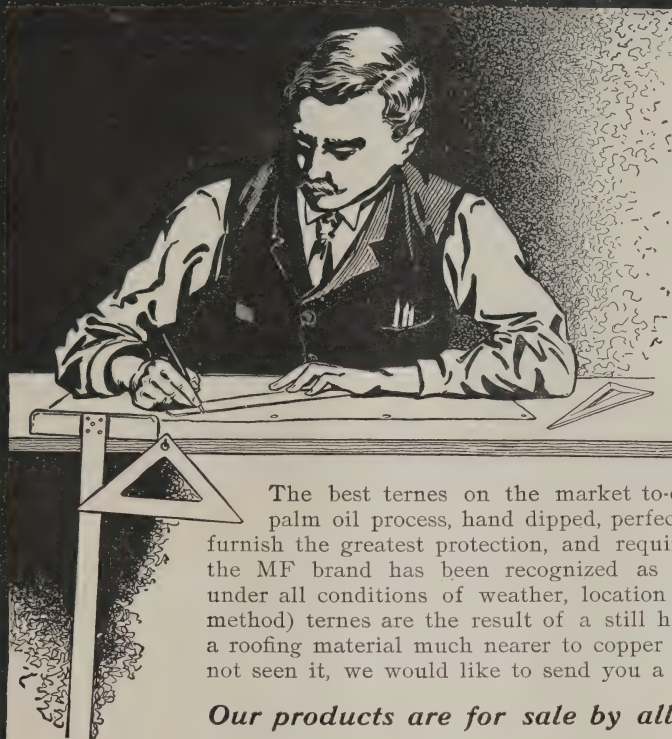
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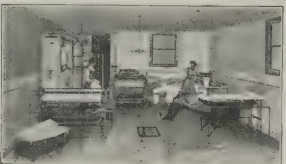
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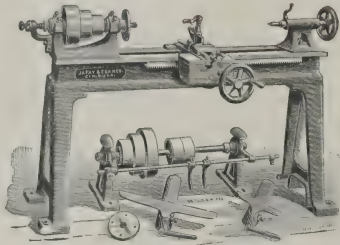
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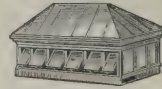
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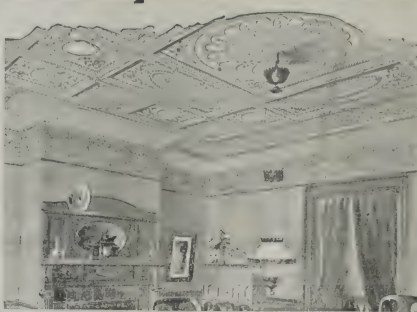


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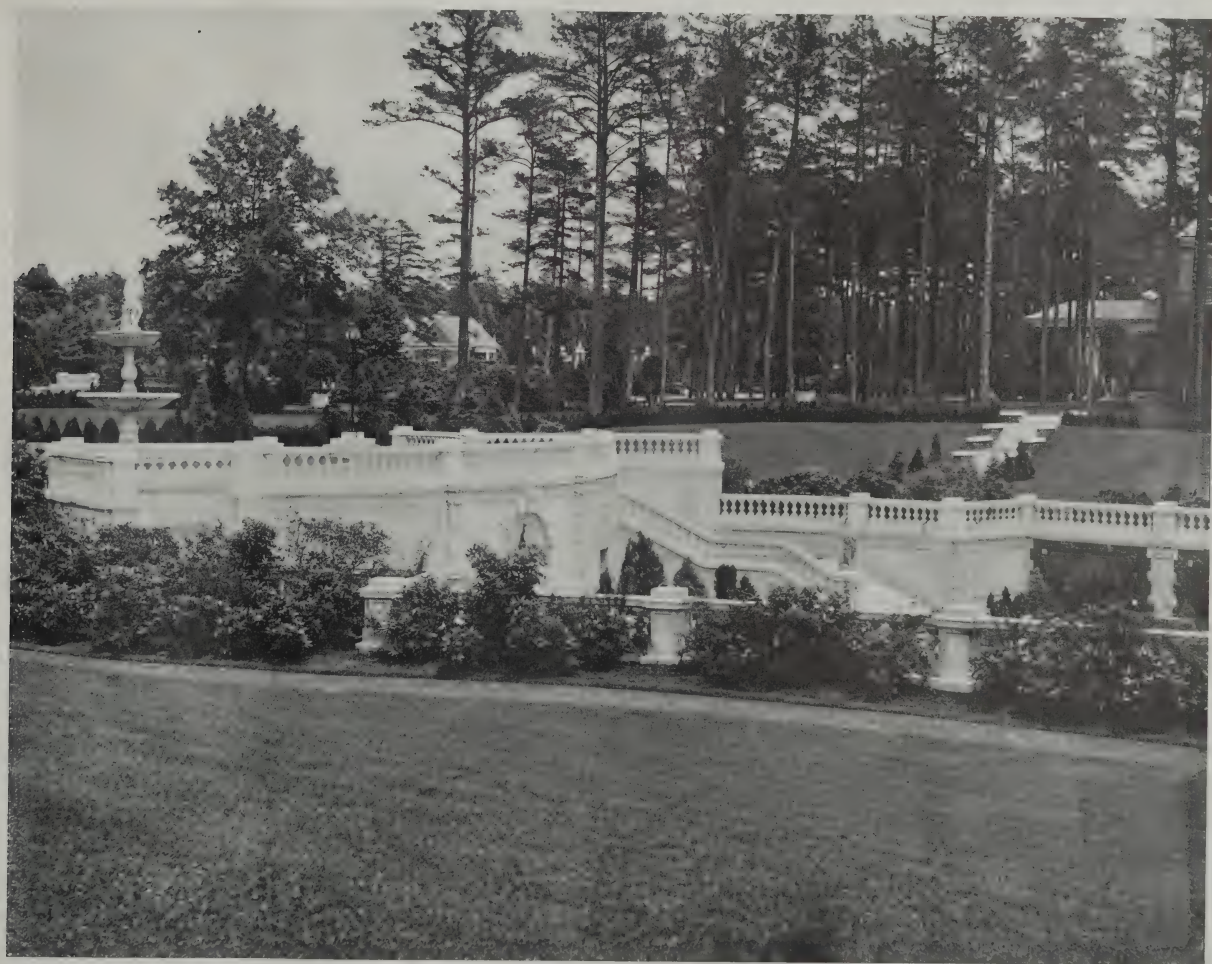
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THE TERRACE AND FOUNTAIN, GEORGIAN COURT, LAKEWOOD, N. J.—See page 25.

MR. BRUCE PRICE, ARCHITECT.

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MONTHLY COMMENT.

THE labor troubles of the summer, especially those relating to the building trades in New York, have been of the most serious nature. A year ago the attention of the country was likewise fixed on labor questions, the problem then being that of the coal miners. The public paid the price of that conflict, and is still paying it; the price of this year's difficulties will be paid in the same way, and possibly will be felt very much longer. However meritorious may be the cause of the laboring man in his battles with the capitalists, the importance of the latter person to the welfare of the community, and even of the laboring man, is too generally overlooked. Large building operations can not be carried on without large sums of money. It is an undisputed fact that these sums, as society is now organized, are in the hands of the capitalists. The moneyed men alone can supply money. There can not be extensive operations, involving large amounts, calling for large credits, necessitating the disbursing of large amounts in wages, without the capitalist.

THE interests of the laboring man and the capitalist are identical. One can not proceed without the other. But capitalists will not invest money in ventures that are likely to be disturbed by conditions entirely beyond their control. The extensive building strikes have weakened the confidence of capital in building as a financial investment. The buildings in process of construction will, in the end, be completed; but the strike season was characterized by an almost total cessation of new ventures. Architects' offices were bereft of work; as little new work was planned as could be managed with. Building in New York has received a heavy setback. It will be long before the building trades recover from this strike.

MONOTONY in design of city houses has long since ceased to be characteristic of New York. Every sort of style and form has an illustration and experiment in the metropolis, and the newest fashions in house design have been quick to take root there. The art nouveau has, however, been somewhat long in reaching New York, but it has at last arrived in a new dwelling recently completed in upper Fifth Avenue. It is not a particularly bizarre design, and is more interesting as establishing this particular idea in architecture than as a curiosity in itself. If, as has sometimes been contended, the art nouveau means simply a departure from the conventional it has long existed in America, and a number of such types may be found in New York and elsewhere. The phrase, however, has come to mean an exotic style much affected by modern French and German architects and artists, and the new house on Fifth Avenue is an example of this sort. It will be interesting to note if the style becomes acclimated in this country.

SCULPTURE bids fair to be as important a feature of the St. Louis Exposition as it was in Chicago. It would be more exact, no doubt, to say that it bids fair to exceed the display on Lake Michigan, as the amount of money appropriated for this decoration is considerably in excess of that allowed in Chicago, and the general exhibition scheme is larger and more elaborate. American sculptors are now much better able to produce effective architectural and decorative sculpture than ever before, and if sculpture has not become a popular art it has at least become one that is generally appreciated. The St. Louis buildings promise to be especially notable in this respect.

THE plea of the BUILDING MONTHLY for sounder building and greater attention to dangers from fire is gradually bearing fruit. Not long ago we chronicled the establishing of an experimental station in Boston, in which fire protection was to be subjected to scientific analysis. And now announcement is made that the Armour Institute in Chicago is about to establish a course of instruction in fire protection and allied subjects. Thus the good work proceeds apace. The wider the knowledge of how to prevent fires the more lives will be saved, and the saving in property will be very great. This is a topic in which every one interested in building in any way should be vitally interested.

MONUMENTAL stairs are seldom found in American cities, although a number of notable examples exist abroad. Perhaps the best known are in Rome, where the stairs of the Piazzi di Spagna and those of the Capitol are fine types of this sort of public monument. Some of the hill cities of France have handsome stairs, those at Auch being a fine specimen. All these stairs have useful functions as well as artistic value. The nearest approach to these structures in this country is the long flight of steps leading to the Capitol at Washington; but this differs from the foreign examples in leading to a single building, while abroad the steps are independent structures leading to upper streets or open places. The steps leading to One Hundred and Sixteenth Street in New York are not at all to be compared with the monumental stairs of the Continent.

FAKE HOUSES.

IT is the easiest thing in the world for a house to be a fake, notwithstanding it may be a real estate fixture. A fake house is just like any other fake—it is a fake. But it differs from most other fakes in the permanency of its nature, the enduring qualities of its materials, and the unfortunate circumstance that it may influence people and places which are in no way concerned with it or its fake-like qualities.

Let us consider, briefly, the question of fake houses and their nature. There are many kinds of fake houses, but they are all alike in this: their fakiness is permanent and irremedial. There is the fake house which is a sham, which pretends to be what it is not. One class has a certain air of gaudy attractiveness and not a single good quality to recommend it. It is a fake because it is not real, and because it pretends to be something other than it is.

Another sort of fake house is the one that seems to be well built, and only manages to keep erect by a modern miracle no physicist has been able to understand. There is a multitude of such houses so slightly built, so flimsily constructed as scarce to be worthy the name of house. But their erection proceeds merrily apace, partly because a certain profit can be realized from them, and partly because of general indifference to things architectural and artistic.

Structural purists will perhaps tell us that most of modern buildings are fakes. Look, they cry, at that proud product of modern architectural and engineering skill, the sky scraper, a building built on steel poles, yet seemingly of stone or terra cotta. The facts of the case are undoubtedly these; yet modern science

has devised no other way for building the sky scraper, and since there is no other way to build it, and every intelligent person knows the way in which it is built, its fakism becomes an academic question whose discussion is of no practical utility.

Very different is a modest house that seeks to impress by the exuberance of unnecessary ornament or the unneedful multiplication of foolish parts. This is the true fake in architecture, because it accomplishes nothing, and its assertiveness can best be compared with offensive human self-conceit, which demands recognition instead of commanding it by personal merit. It is a good kind of a house to avoid, the sort of house no thoughtful person would dream of building, or think of occupying if the opportunity of doing so were presented. The moment the public reaches the point when it admits that a certain class of houses is too bad to be considered for any purpose, a real advance will have been made in architecture that is more considerable than any step of progress yet taken. Just as soon as it is realized that fake houses are distinguishing marks of fake people, just so soon will fake houses cease to be built. The greatest of fakes does not wish to advertise that fact in his dwelling house, and houses that can not be sold or rented will not be built.

An entirely different class of fake houses is those which, being located, let us suppose, on the seashore of Long Island or by the waters of Buzzard's Bay, pretend to be Italian palaces or Swiss chalets, or any other strange, odd, eccentric fake kind of a house other than a good American dwelling, set up in America, paid for by American money, and intended for the use of American people. This is a very common kind of fakism in architecture, and one most difficult to kill off. Yet a little consideration will make clear that a house might cost hundreds of thousands of dollars, be well designed artistically, be well built from the constructional standpoint, and yet so completely ape foreign and strange ideals as to be a fake of the first rank.

Fakism is, indeed, very rampant in modern house building. It dominates other kinds of architecture, but in house building its blighting effect is most evident. Why should not a house be a real work of architecture, even the smallest of houses? Why should it not be frankly a frank piece of construction, built exactly as it should be, and unadorned save with beautiful adornments? That, indeed, is the real heart of architecture, beauty in construction and design. And if this beauty be real, as all beauty must be, the reign of fakism will come to an end, and honesty in building and beauty in architecture have actual realization.

Fake houses abound because they are both tolerated and encouraged. People often do not know they are fakes, or do not realize the utter horror of their nature. Sound walls and tight roofs are by no means so common as they ought to be, and yet, very frequently, these are the chief considerations demanded of buildings. Very necessary and essential, truly, but they by no means make up the whole of architecture. And even the barest of walls may be fakes, built in a fake manner, cunningly contrived so that months pass by before the hollowness of their construction is made clear to the purchaser; or they may express a fake by their cut and style; or, again, by being festooned with meaningless patterns labeled "decorations."

Very much energy is wasted in the making of fake designs under the mistaken notion that there is a demand for such worthless structures. Often there is no real demand, no demand, that is, that rests on a solid basis, and which must be filled whether it be possible or not. It is much more likely to be the case that there is nothing else! It is a fake house or no house, and the most urgent disclaimer against fakism in building will hardly hesitate between no shelter and fake shelter.

Thus the question has its aspect of practical difficulty, and yet the real contention, that fake houses are abominations upon the earth admits of no contradiction. They are bad, and bad all the time, day and night, so long as one stone or one shingle remains heaped upon another.

And then there is the permanency of these building fakes to be considered. A fake house, whether it be large or small, important or unimportant, is a positive detriment to progress and a hindrance to the enhancement of real estate values. It may not be the eyesore a hotel is; but once its fakism is made clear to any community its blighting effect will last as long as it does.

Honesty in building, as in other things, is the best policy. If a house be honestly built, if the design be an honest one, if it stands for what it is and not for something else, it has good, real, certain qualities of excellence that can never be taken away from it. But the utmost amount of fixing will not remedy a fake house. Its fakism is there to stay. It is the one quality that has brought it into being, and it is the one quality that will stand by it until its ruin is wrought by the same agency.

TALKS WITH ARCHITECTS

By BACB FERREE.

THE GARDEN AT GEORGIAN COURT.

The first time I visited Mr. George J. Gould's house at Lakewood—Georgian Court it is called—I did so under the immediate and personal care of Mr. Bruce Price, its architect. It was a trip of the utmost joy and delight, for while it would have been a pleasure to have gone anywhere with Mr. Price, this visit was especially memorable to me because he regarded that noble dwelling as his masterpiece in structures of that sort, and his fine enthusiasm in the work he had created was penetrating and inspiring. Mr. Price was always frankly interested in his own work, as what true artist is not? and his artistic temperament had here obtained an almost free expression for his fancy, which had found vent in a most utilitarian structure, it is true—for a house is necessarily utilitarian—but set off and adorned in a thoroughly delightful manner.

Although made several years ago, the details of this visit are fresh in my memory. And why should they not be? For the house was and is one of the most interesting in America. It is quite as interesting for what it is not as for what it is. The critic of this house must remember that Mr. Gould's residence, while the abode of a man of large wealth, does not compare in size or with lavishness of furnishings with many other wealthy American homes. This does not mean that it is small or unpretentious or wanting in character. On the contrary it has all of these, and is remarkably successful in being thoroughly congenial to its owner, rich and splendid in its interior adornments, and yet so ably designed, so consummately well put together, that no observer of notable houses in this country can afford to overlook it.

Mr. Price's marvelous skill was never put to better use than in Georgian Court, in which he struck the exactly correct note of lavishness. In plain words, the house is splendid without immediately impressing that fact upon the spectator. Even the outsider, who gets no further than the fence which surrounds Mr. Gould's property, is at once made aware that the house is something out of the ordinary, a house, in short, to be considered because an architect designed it. The interest of the place is not because Mr. Gould lives in it, but because Mr. Price designed it. And that is very close to the highest success in the designing of dwelling houses.

Now, alas, no one can visit Georgian Court again under Mr. Price's genial guidance. The last building he would personally superintend has been built, his last work been given to the world. His death in Paris a few months ago came as a shock to all his friends, of whom I was pleased to think I was perhaps one. Certainly he excited my warmest admiration, and when the history of the higher architecture in this country comes to be written his inspired works will be found to take a high rank in such a review. Mr. Price was essentially an artist, a man of keen refinement, of delicate susceptibility, of broad culture. All his work speaks of these qualities, and Georgian Court as much as any of them.

And so this lovable, charming man, this prince of good fellows, this architect—to give him the title he prided himself on most and in which he most delighted, and which, in truth, was more truly his than it is many another practitioner of the art of building—has passed on into that unknown from which no one returns. His death interrupted the preparation of this article, but I owe many of the facts contained in it to the courtesy of his secretary.

At the time of my first visit to Lakewood, Georgian Court had no garden in the modern sense of the word, certainly no garden as it has since been embellished with. Mr. Gould had not long occupied the house, and while some paths had been laid out, some flower beds planted, some clumps of shrubbery installed, the possibilities of the estate for garden-making had not been realized.

And that has now been changed, and Georgian Court has been given a garden, sumptuous and splendid almost beyond description, with stately paths, broad lawns, wonderful vistas, and an architectural and sculptural setting that make it one of the noblest pleasure grounds in America.

The conditions that attended the creation of this garden were exactly those that were favorable to fine realization. The owner was a man of culture and possessed of a fine appreciation of art and art values—qualities not always combined with large means; there was great wealth, without which the rare and costly

sailles for its model, or to place it in comparison with any of the great gardens of Italy or of England. It is sufficient that it is fine and distinctive, and these two words sum up about the utmost limit of praise of any work of art.

Mr. Price's fine perception of proportion and fitness was seldom better illustrated than here. His task was to create a garden, and he did that and nothing else. When architecture was needed for retaining walls and balustrades, for pergolas and exedras, it was called into use and architectural adjuncts employed exactly where they were needed and nowhere else. The fact is of interest because it is sometimes supposed that an architect's point of view is building only, and there is not a little evidence in the world to that effect. Mr. Price, however, could not be guilty of such a solecism, and thus his architectural adjuncts are architectural adjuncts and nothing else.

And the same fine rule runs through the whole work. Broad paths lead to points of interest and create fine

vistas. Foliage is placed where it will help in the creation of a work of beauty. Vases, statuary, fountains, and seats are placed where they, too, have a definite note in the general effect. Some of these ornaments are of rare beauty and interest—of unusual beauty and elaborateness. For a perfect whole can not be made out of imperfect parts.

Thus with infinite labor, with deepest interest, with keenest affection and absorption in the work, the labor of garden creation proceeded apace at Georgian Court, until, in the year of the architect's death, it approached completion. A garden is never done. A house or a building may be completed and brought to a finality; but a garden grows and grows, it waxes more beautiful as the years go on, and the supremacy of its success is only realized long after those concerned immediately in its making have ceased their earthly labors. But that final success, that utmost test, is determined by the skill of the designer at the beginning.

The garden at Georgian Court is to-day, at the time of its birth, a thing of beauty and a work of art. Nature will add to that beauty, its artistic merits will increase with age, but the distinction its designer gave it will never be lost nor will his identity be swallowed up while the lines he laid down, the structures he erected, the plants, trees, and shrubs he planted remain as he placed them. It is a wonderful garden, that of Georgian Court, and unless deliberately harmed, it always will be wonderful.

This garden was a work of special joy and interest to

Mr. Price, I am told, and I can well believe it. He was nothing if not enthusiastic, and he was enthusiastic in a thoroughly artistic, convincing way. Georgian Court offered him many opportunities. The house was more restricted in size than at first proposed, but nevertheless its designing and erection was a source of the utmost satisfaction to its accomplished architect. He lavished the resources of his art upon it, and these were not a few, as all the admirers of Bruce Price are well aware. Mr. Gould was perhaps wise in postponing the making of the garden for a season; it gave both him and his architect time to develop their ideas, and a garden is best developed around a completed building, to which it is the setting and for which it is designed. The question is not, indeed, does the house match the garden, but does the garden embellish the house and be in accord with it? The house, the stable, and other outbuildings completed and in working order, the time arrived for the roc's egg—the garden—the final touch, the last great work. Fortunately Mr. Price lived to complete it, and he has unquestionably left his fairest monument in the pines of Lakewood. A group of photographs is given on pages 23, 30, and 31.



THE TERRACE AND PORTICO, A RESIDENCE AT ST. DAVIDS, PA.—See page 41.

objects we humbler folk call works of art, can not be produced or acquired; there was a fine site—the house being placed in a beautiful grove of cedar trees which is characteristic of Lakewood—nature had already made the frame that awaited only the creative touch of the designer.

And that was the last essential, and in some respects the most important. For a true artist can redeem the most barren landscape, as Le Nôtre and his associates showed at Versailles, and has been shown many a time again where barren spots have been made to bloom with undying beauty of nature and art. But Mr. Gould was fortunate enough to take as his architect—his Michel Angelo as a friend of Mr. Price's once wrote him—a man of profoundly keen artistic temperament, who saw a magnificent opportunity in the creation of this garden, and who rose to the full limit of his opportunity.

Thus under Mr. Price's guidance, and with an enthusiasm that was almost limitless, the grounds around the Gould house were transformed, embellished, adorned and glorified. It is neither necessary nor helpful to compare this garden with any other; to look to Ver-



RESIDENCE OF MRS. NELSON WRIGHT, MT. PROSPECT AVENUE, NEWARK, N. J.—See page 38.
MR. CHARLES ALLING GIFFORD, ARCHITECT.



THE HALL.



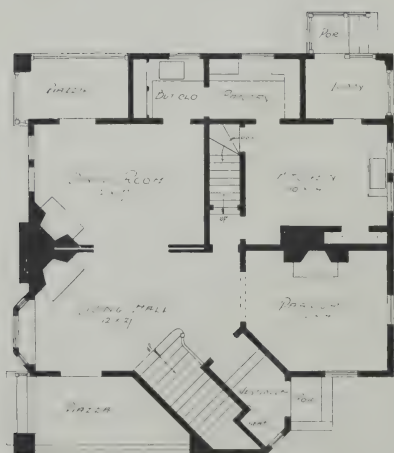
THE LIVING-ROOM.

RESIDENCE OF MRS. NELSON WRIGHT, MT. PROSPECT AVENUE, NEWARK, N. J.—See page 38.

MR. CHARLES ALLING GIFFORD, ARCHITECT.



Second Floor

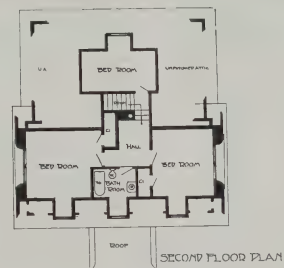
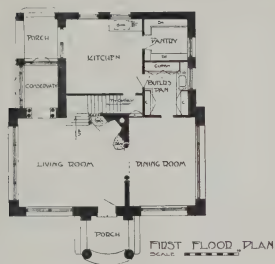


First Floor



HOUSE FOR DR. E. H. ABBE, ABBEY TERRACE, NEW BEDFORD, MASS.—See page 38.

MR. NAT. C. SMITH, ARCHITECT.



HOUSE FOR A. M. YOUNG, ESQ., PINE ORCHARD, CONN.—See page 39.

MESSRS. GRIGGS & HUNT, ARCHITECTS.



THE GARDEN AT GEORGIAN COURT, ESTATE OF GEORGE J. GOULD, ESQ., LAKEWOOD, N. J.—See page 25.
MR. BRUCE PRICE, ARCHITECT.



THE GARDEN AT GEORGIAN COURT, ESTATE OF GEORGE J. GOULD, ESQ., LAKEWOOD, N. J.—See page 25.
MR. BRUCE PRICE, ARCHITECT.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



RESIDENCE OF J. P. PHILIPS, ESQ., GLEN RIDGE, N. J.—See page 39.
MR. JOHN J. PETIT, ARCHITECT.



RESIDENCE OF J. P. PHILIPS, ESQ., GLEN RIDGE, N. J.—See page 39.
MR. JOHN J. PETIT, ARCHITECT.



RESIDENCE OF COL. HEMAN DOWD, SOUTH ORANGE, N. J.—See page 40.

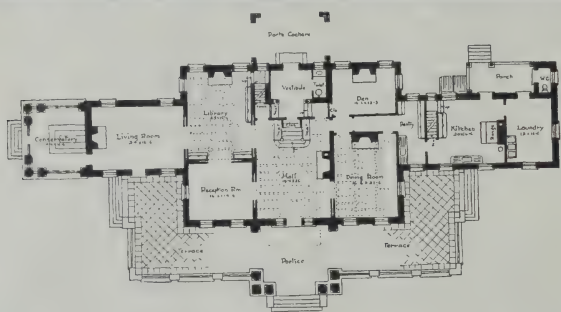
MR. ROBERT S. STEPHENSON, ARCHITECT.



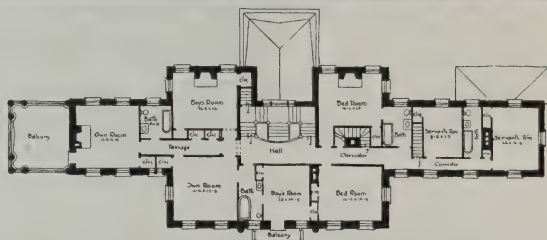
RESIDENCE OF J. P. PHILIPS, ESQ., GLEN RIDGE, N. J.
MR. J. J. PETIT, ARCHITECT.



HOUSE OF CHARLES G. TRAUTWEIER, ESQ., LUDLOW, N. Y.
MR. L. C. HOLDEN, ARCHITECT.



First Floor Plan



Second Floor Plan



RESIDENCE AT ST. DAVIDS, PA.—See page 41.

MR. DAVID KNICKERBOCKER BOYD, ARCHITECT.



HALL LOOKING TOWARD LIBRARY.



RESIDENCE AT ST. DAVIDS, PA.—See page 41.

MR. DAVID KNICKERBOCKER BOYD, ARCHITECT.



THE CAMPING "DEN."

So the cozy corner, Turkish room, Dutch room, Japanese room and their kind are to go, and in their stead we are to have the camping "den," which now, says a contemporary, occupies the pleasantest corner of the house. A country house just fitted with one of these snug retreats has reproduced to the life a favorite camp fitted in the Adirondacks by an old guide. In fact the guide is the genius of the Long Island reproduction, for from his ax and jackknife issued the canoe birch couch frame, chairs, settee, table, stand, and window boxes. To help out the effect, mounted heads and skins serve as hangings and rugs; the antlers of a deer surmount the rustic fireplace, and photographs of mountains and lakes and forest trails give touches of realism. With furnishings of this order the stores are equipped as never before. In the natural canoe birch one can find Morris chairs, Shaker rockers, bedsteads, window boxes, and even plots of vivid grass—at least that is what the green rugs made for the purpose look like at first glance.

THE DINING-ROOM.

The dining-room, remarked a recent speaker, to-day is quite as much a family center as the living-room. A deal of health and family affection depends on our way of taking our meals. Many a family, where all the members are busy about one thing or another continually, does not meet except at meals and in the evening. In the breaking bread together is the time to cultivate acquaintance with one another. The dining-room furnishings should be, first of all, substantial; then as beautiful as the pocketbook admits—but always with the function of use in mind. Meaningless ornaments, dust collecting brack-a-brac, an extreme of pictures, are out of place. In the selection of dishes and table linen—dear to womanly hearts—there is abundant opportunity for good taste; but even here beauty must not be at the expense of utility.

PIAZZA PILLOWS.

The newest and most fashionable idea in the pillow weaving line, says a recent writer, is Madagascar embroidery, done with long, wide strands of straw or grass stained in rich greens, reds, and browns. Some superb looking pillows have large, vivid red poinsettias worked upon a cool green background, and no other scheme of decoration upon Madagascar embroidery is quite so handsome. Green and brown are combined effectively, and so are red and brown. The latter color appears mostly in clear, light tones.

In the matter of linen covers for pillows, all sorts of braided and embroidered designs appeal to the taste of the buyer or worker, blue and white and red and white being popular combinations. The handkerchief pillow is a dainty and easily manufactured affair, whose pattern many might like to imitate. Four small white handkerchiefs with deep fancy borders of blue are sewed upon the four corners of a white lawn square. The handkerchiefs allow two inches of white to appear across each side of the pillow, which is bordered with a lace-edged lawn frill.

RAG RUGS AND CARPETS.

Rag rugs and carpets are no longer, says the Commercial Advertiser, relegated to the kitchen or the attic playroom. They are enjoying a vogue of their own, due probably to the Colonial craze and to the objection the housewife of to-day has to carpets, instead of bare floors strewn with rugs. Every one can not have Oriental rugs, so the rug woven of "rags" supplies its place as an article less expensive than a Persian or Turkish rug and more attractive and serviceable than a cheap carpet. In the dining-room of an uptown house the polished floor has a circular rug in pale colors—dull blues, soft browns, and faded reds and greens—all intermingled with charming effect. A border of black gives "accent" to the mixture of soft hues. The rug cost practically nothing, considering its undeniable beauty (and its practical owner complacently "expects it to wear as long as the floor!"), but it is in perfect harmony with the old mahogany chairs and sideboard, the china cupboards with mulioned panes and the other artistic and dignified furnishings of a singularly attractive apartment.

Odd and pretty hangings can be made of odds and ends of silk, satin, and velvet. The silk petticoats—so uncountable in this era—the discarded silk gown, silk linings and bits of ribbon of all hues and qualities may find an honorable and ornamental end woven into a curtain to hang at a drafty door.

RESIDENCE OF MRS. NELSON WRIGHT, MT. PROSPECT AVENUE, NEWARK, N. J.

The illustrations shown on the cover and on pages 26 and 27 present the residence of Mrs. Nelson Wright, at Newark, N. J.

The building is of the Colonial style with good detail. The attractive features are the porch at the front and the living porch at the rear. The underpinning and the superstructure above is constructed of Underhill brick, laid in white mortar. The trimmings, which are of wood, are painted white. The roof is covered with shingles of the Alligator brand. Dimensions: Front, 48 ft.; side, 54 ft., exclusive of porch. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft. 6 in.; third, 8 ft.

The hall is a central one, and is trimmed with white pine, treated with white enamel. The staircase is of handsome design, with broad sweeps at the bottom, and the newel-post formed of a cluster of spindle balusters. The treads are of oak, the risers and balusters are painted with white enamel, and the rail is of mahogany. The wall is covered with a grayish paper with large figure in design. The reception-room is treated also with white enamel and its walls are hung with pale yellow silk. The fireplace has a tiled hearth and facings of white enamel tile and a mantel of Colonial style. The living-room is trimmed with quartered oak, and is finished with a dark Flemish color. It has a low paneled wainscoting and a beamed ceiling, and also has an attractive ingle-nook, separated from the room proper by an archway supported on massive fluted columns with Ionic capitals. The fireplace has a hearth and facings of tea-pot tile and a mantel of oak with shelf supported on small fluted columns. The dining-room is trimmed with pine and is treated with white enamel. The walls are treated with Delft blue, and the fireplace has a tiled hearth and facings and a mantel. The butler's pantry is reached through a passage, the latter having sliding door from front hall, which forms an access to the piazza. The pantry is trimmed with North Carolina pine and is provided with bowl, dresser and cupboards. The kitchen is furnished with range, sink, dresser, and a double pantry.

The second floor is trimmed with pine, and is treated with white enamel; it contains four bedrooms, sewing-room, linen closet, seven clothes closets, and two bathrooms, the latter wainscoted and paved with white enameled tiling, and are furnished with porcelain fixtures and exposed nickelplated plumbing. There are two servants' bedrooms, with bath, trunk room, and den on the third floor. The cellar, with a cemented bottom, is furnished with a furnace room, fuel room, cold storage and a laundry. Mr. Charles Alling Gifford, architect, 18 East Seventeenth Street, New York.

HOUSE FOR DR. E. H. ABBE, ABBEY TERRACE, NEW BEDFORD, MASS.

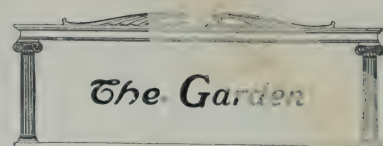
On page 28 will be found an illustration of the dwelling erected for Dr. E. H. Abbe, Abbey Terrace, New Bedford, Mass.

The underpinning is built of a light gray stone, laid ashlar, and the building above, of wood, is covered with matched sheathing and then shingles. This shingle work is stained and finished a dark, soft brown color. The trimmings are painted ivory white and the blinds light yellow. The roof is covered with shingles, and stained a dull mottled green effect, in harmony with the remainder of the building. Dimensions: Front, 37 ft. 8 in.; side, 39 ft. 4 in., exclusive of porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The house has two entrance ways, one from a porch into a vestibule provided with seat and window, and one from the piazza. The reception hall is trimmed with whitewood and is finished in Flemish oak. It contains an ornamental staircase, a window seat, and an open fireplace with tiled facings and hearth, and a mantel. The parlor is treated with ivory white paint, and has an open fireplace furnished with tiled facings and hearth, and a mantel of Colonial style. The dining-room is finished with forest green effect, and has a tiled fireplace and a china closet. The butler's and kitchen pantries are fitted complete, and the kitchen is furnished with sink, tin closet, range, etc.

The second story is trimmed with spruce and is treated with ivory white paint, and contains four bedrooms, linen closets, and a bathroom. Two of the bedrooms have open fireplaces, and attractive nooks with seats. The bathroom is furnished with porcelain fixtures and exposed nickelplated plumbing. The third floor contains the servant quarters, and ample storage space. A cemented cellar contains a furnace, laundry, fuel rooms, etc. Mr. Nat. C. Smith, architect, New Bedford, Mass.

Wall paper comes now with cotton hangings to match, and bedrooms are charmingly fitted with the two.



AN AUTOMOBILE LAWN MOWER.

The arrival of the automobile lawn mower will be hailed with joy in every suburban place and spot where grass grows only to be cut down. There is probably no part of garden work so slightly enjoyed as that of keeping the lawns in order, and any device that will lessen the labors of this work will be a public boon that will bring a large fortune to its inventor. The United States Government is the fortunate owner of an automobile lawn mower, and the single drawback it presents is its large size and cost. It is, however, a most interesting contrivance. It is used on the lawns surrounding the United States Capitol.

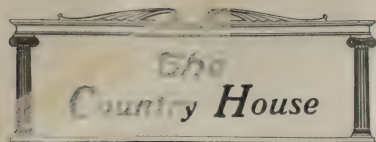
It is thus described in a recent issue of the weekly Scientific American: The new power lawn mower is a 15-horse power gasoline machine, weighing approximately 2,000 pounds. It cuts a swath of 30 inches, but such is the speed at which it may be operated and the facility with which it may be handled that the new mower is capable of doing the work of the two horse machines which it displaced, and this despite the fact that the latter cut a swath of 36 inches. As will readily be appreciated, the cutting blades of the motor mower may be brought, in action, much closer to walls and trees than was possible in the case of the horse machines, and some idea of the saving of work thus effected may be gained from the fact that whereas more than a dozen men with hand machines were formerly required to "clean up" after the large machines, less than half that force is now necessary. Perhaps the greatest advantage of the new mower is found, however, in that it does not in its operation inflict the slightest injury upon the lawns.

GARDEN WEEDS.

In gardens where the soil is light, and which requires much manure to preserve it in a fertile condition, the many annual weeds that attempt to gain a footing, cause, says the Gardeners Chronicle, under the most favorable methods, no end of trouble to keep under, and if for a few weeks they are allowed to possess the land in peace, the trouble and labor are sevenfold intensified. Happily they are easy to destroy in a young state, and by the simple and inexpensive system of running a Dutch hoe through the surface-soil directly weeds are seen to have germinated, very much labor in the future is saved. Sometimes it seems impossible to carry this system into effect, and gardens in consequence become weedy to a distressing extent. The proper course to pursue is to hoe, and to do so in every year before the haulm has reached the surface. By this means the weeds are destroyed as soon as they have germinated. It is indeed a commendable system to hoe ground periodically, whether weeds are in evidence or not. It is beneficial to crops, and, of course, unless in weather that is constantly wet, the chance of weeds growing is reduced to a very great extent. Toward autumn, however, it is all but impossible to keep weeds under. In this garden the annual grass, Poa annua, springs up at all seasons, but most abundantly in autumn, when generally the weather conditions are all for the weed and against the gardener. Hoeing is no use whatever, and our only comfort consists in paring alleys with a spade, and with the same tool lightly pointing between the rows of growing crops. A little more time is consumed in the process than were a hoe used, but the work when performed is conclusively effective, and as a rule seldom requires repeating.

CITY TREES.

SPASMODIC attempts are made, from time to time, to plant trees in our American cities, says a correspondent of the Evening Post, but that they are not made with persistence, and in accordance with a scientific system, must be sufficiently evident to every thoughtful mind. Let one who doubts this just cast a thoughtful and observing eye over almost any of the shade trees in the streets of large American cities, and then pay a visit to Paris with the special view of considering, among other things, the condition and maintenance of the trees of her streets. In the first place, her trees are all planted with a skill and carefully contrived expenditure of soil and manure which is hardly known in the practice of this country; in the second place, the watering is carried on with a persistence and systematic intelligence which, in view of the limited public expenditures for the construction and maintenance of public works in France as compared with those of this country, are truly astonishing. As to tree pruning in Paris, it has been developed into a fine art.



COLORS AND PAINTS.

THE unpainted shingle house does not always grow soft in color and picturesque in appearance, says a daily paper, in spite of what the artistic advisers of the cottage builder tells him when he suggests painting his summer home. It all depends on the climate and the exposure of the house to the winds that blow and the storms that rage. At the seashore even paint fades and changes hue. White, red, dark brown, and green seem to wear well in most localities, and French gray and a curious shade of rose looks charming if the cottage is framed in greenery. The correct color for a colonial house is sulphur yellow with white for window casings, doors, etc. For the Elizabethan cottage with black beams and cement walls, very dark green or dull black; for the house half red brick and half rough gray stone or pebble dash, brown—a dull, soft brown—or soft green.

The plaster cottage, with a roof of green or red shingles, is pretty with window casings of either black or white.

The cottages of one pretty green spot near town have benefited by an epidemic of old-fashioned green and white this season. The effect is refreshingly cool and decorative, as nearly every house nestles back from the road amid greenery and is surrounded by leafy trees. To have the best effect when a house is painted green and white, the white should be perfectly pure, with no tinge of cream in it whatsoever, and, therefore, a very large percentage of white lead, which is the most durable part of paint, is used. The new and most used green is neither the subdued olive tint of past years, nor the pea green which some house decorators have tried to make popular. It is the bright ordinary green called Brunswick, with which the copper or brass appurtenances of front doors look extremely well. The newest ornaments, however, comprising a knocker, a handle, a latch key, and letter box fitting, are made of pewtered silver, a later creation than oxidized silver or black wrought iron. On the whole, however, copper or brass kept well cleaned and burnished is the best choice for the cottage picturesque, and of the two copper is the newer.

THE MOUNTAIN CAMP.

THE treatment of the walls of mountain camps, points out the Tribune, offers much scope for the exercise of artistic taste and ingenuity. One millionaire has every alternate room in the main cabin entirely open in the front on to a piazza that connects all portions of the irregularly built dwelling. The chinks in the inner surface of the log walls are filled in with delicate gray green lichens and mosses of the Adirondacks, held in place with cement. Navajo and Iroquois Indian rugs and blankets make floor and wall coverings, and are thrown over divans comfortably piled with pillows covered with Indian stuffs of harmonizing colors. Indian arms and ornaments are tacked upon the walls; rustic furniture of weathered oak and hickory is disposed about the rooms, with trophies of the chase hung over a corner mantel, built of stone, with a great cedar log for mantelshelf. Electric lights hang in East Indian lamps, and Indian baskets of Abenaki make form convenient receptacles for reading matter and odds and ends of various sorts. Such furnishing gives the effect of rich simplicity and comfort, is entirely harmonious with the warm brown of the log walls, the green ceiling of fragrant pine boughs (which often canopy a cabin living room), and does not proclaim the costliness of the materials employed. Practically as pleasing an effect can be produced with cheaper forms of hickory furniture, East Indian cotton prints and blankets and rustic ornaments, chosen with discrimination.

Cushions covered with colored plaid matting are charming novelties for summer homes, while pieces of stamped or burnt leather are fashionable as covers for chair seats and cushions, frequently being held in place with a surcingle.

A beautiful wall treatment in a log cabin living-room is a color scheme of dull green and brown. The walls are covered with extra heavy jute burlaps of a cool shade of green, and this is paneled in squares by means of crosswise strips of cedar bark about three or more inches wide. A good moodi mat of East Indian grass in green tones is spread upon the polished floor, and the room is furnished with the beautiful and somewhat costly grass furniture made of American prairie grasses from the far Northwest. The walls are decorated with bright prints and photographs, which give a touch of needed color to the forest hued room.

HOUSE FOR A. M. YOUNG, ESQ., PINE ORCHARD, CONN.

THE engraving shown on page 29 illustrates a cottage which has been erected for A. M. Young, Esq., at Pine Orchard, Conn.

The structure is a combination of field stone and shingles. The first story is built of field stone laid in a random manner. The gable ends are shingled and are painted red. The roofs are covered with shingles and are stained a moss green. The trimmings are painted cream white. Dimensions: Front, 36 ft.; side, 38 ft., exclusive of porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.

The interior throughout is trimmed with cypress, except the kitchen and pantries, which are of North Carolina pine. The living-room is finished in an attractive manner. It has a batten wainscoting to the height of six feet, which is finished with a plate rack. The ceiling is beamed, and the whole is stained and finished in Flemish brown. The fireplace, which is built of cobble stone, with arch and shelf of rough stone, is the feature of the room. The staircase is an attractive one, and rises around the chimney. The dining-room is separated from the living-room by an archway with columns, and is furnished with the same kind of wood work, and is treated with forest green effect. The butler's pantry is fitted with drawers, dressers, and cupboards complete. The kitchen is provided with a sink, range, store-pantry and a porch. The conservatory off the living-room is an attractive feature. The second floor contains two bedrooms and a bathroom, and one servant's room. The bathroom is furnished with porcelain fixtures and exposed nickel-plated plumbing. The cemented cellar contains a furnace, laundry, fuel room, etc. Messrs. Griggs & Hunt, architects, Waterbury, Conn., and New York.

RESIDENCE OF J. P. PHILIPS, ESQ., GLEN RIDGE, N. J.

THE residence which is illustrated on pages 32 and 33 has been erected for J. P. Philips, Esq., at Glen Ridge, N. J. The principal characteristic of the building is the fact that it is only two stories in height, and is covered with a low roof with broad, overhanging eaves. The terrace and leaded glass windows are good features. The underpinning is built of brick. The superstructure, which is constructed of wood, is covered throughout the exterior with white cedar shingles and is left to weather finish. The trimmings are painted ivory white. The terrace has a balustrade and a floor paved with a composition of concrete, laid off in eight inch squares. Dimensions: Front, 44 ft.; side, 45 ft., exclusive of terrace and porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.; 6 in.; billiard room, 11 ft.

The interior throughout, except the dining-room, is trimmed with white pine, which is treated with ivory white paint, except the billiard room, which is treated with a dark bottle green paint. The entrance is through a vestibule into a large living-room, which is provided with a paneled and beamed ceiling. The ingle-nook is the most attractive feature of the living-room, and is raised one step above the level of the main floor. It has an open fireplace with the facings built of brick and terra cotta. Handsome carved corbel brackets support a shelf, over which the mantel is treated in the Dutch style. The hearth is laid with red Dutch tile. On either side of the ingle-nook there are windows glazed with leaded glass. The nook opposite the ingle-nook has bookcases built in and a paneled seat.

The billiard room is unusually attractive, and is separated from the living-room by columns with Ionic capitals. The nook, with its raised platform and paneled seat, and the balcony thrown out from the landing of the main staircase, are notable features. The fireplace has a green tiled hearth and facings and a mantel supported on massive caryatides. Beams extend across the ceiling and finish against a modern cornice which surrounds the room at the intersection of the wall and ceiling. The dining-room is trimmed with quartered oak and is treated artistically. It has a fluted pilaster effect which rises to a modern band extending around the room to the height of the door and window casings. The ceiling is beamed. The leaded windows are glazed with delicate tinted glass. The cluster of small leaded windows over the paneled seat is a good feature. The fireplace has a tiled hearth and facings and a mantel of good design. The pantry, of large dimensions, is furnished with sink, drawers, and dressers complete. The kitchen, laundry and their dependencies are fitted up with all the best modern improvements complete.

The staircase hall is separated from the hall proper, and is built with white painted treads, risers, spindle balusters and a mahogany rail. This stairway leads up to the second floor, which contains five bedrooms, provided with large, well fitted up closets, and two bathrooms, besides two servants' rooms, with a private stairway to the kitchen. The bathrooms are furnished with a tiled wainscoting and porcelain fixtures, with exposed nickel-plated plumbing. A cemented cellar contains a furnace room, cold storage, fuel room, etc. Mr. John J. Petit, architect, 11 E. 33d St., New York.



ELECTRIC GENERATOR FOR LIGHTING RESIDENCES.

A SIMPLE generator providing the power required in a single detached residence is a much-desired commodity. It is only within the last few years, since the introduction of low-power oil engines, that such installations, satisfying the conditions of simplicity and economy, have become practicable.

Last summer a firm put up such an electric generator in a villa on the coast of France; the plant is described in the Scientific American Supplement. This installation served for the lighting of the villa and for a number of domestic purposes, giving every satisfaction. At the same time, by a peculiar arrangement it furnished the power for an automobile.

The generator consists of an oil engine directly connected to a two pole dynamo. It is thoroughly well made, and the firm supplies such generators in five sizes, giving 1½, 3, 4½, 6, and 8 horse power respectively with an angular velocity of 1,500 revolutions per minute. The dynamos give 1.1, 1.65, 2.2, 3.3, and 4.4 kilowatts respectively at 110 volts, sufficient for lighting 20, 30, 40, 60, and 80 lamps of 16 candle power, or 30, 45, 60, 90, and 120 lamps of 10 candle power. The total weight of the five models is 285, 465, 478, 741, and 770 pounds respectively. The space occupied by the generator is very small. The plant may be supplemented by a battery of accumulators, but the generator is capable of producing an exceedingly constant voltage, as an electric regulator controls the charge of the oil engine and preserves a constant difference of potential at the terminals of the dynamo. A switchboard of the simplest possible construction is placed in the engine room. It comprises a bipolar contact breaker, a series of cutouts, an exciting rheostat, and cell switches for the accumulators. The leads in the building are chosen so as to match the decorations of the rooms, and are supported on little bone insulators. It is found that this arrangement, if carefully carried out, is quite satisfactory for currents at 110 volts.

The cost of such an installation is comparatively low. In the case of a 3 horse power generator, for instance, capable of lighting 45 lamps of 10 candle power, the expenses would be about as follows:

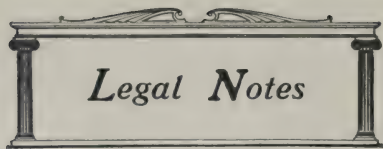
Three horse power (1,650 kilowatt) generator with all accessories (water tank, oil tank, pipes, etc.), carting and installation, \$490. Battery of 60 accumulators of the type Heinz, of 36 ampere hours, with installation, \$220. Switchboard, with cost of packing, carting, and installation, \$80. Total, \$1,055 for the whole plant, installation, etc. To this add the cost of fixtures, say \$125. The initial cost in all is, therefore, in round numbers, \$1,200.

With the above-described plant the consumption of oil, when 45 lamps of 10 candle power are burning, is one-third gallon per hour.

In the villa to which reference was made above, an electric installation has been put up which offers yet greater advantages than those enumerated. This installation provides for the propulsion of an electrical omnibus with ten seats, carrying a 4 horse power generator and a battery of 40 accumulators of 150 ampere hours capacity. This omnibus is used for driving during the day, while at night it provides the power for the electric lighting of the villa and for various domestic work, such as pumping, heating, cooking, etc.

Electric carriages are well known for their smooth working. When the omnibus is in motion, the generator is always at full speed. If the energy produced is greater than needed, the sulphur is charged into the accumulators; going uphill, when the generator does not supply sufficient energy, the power stored in the accumulators is added to that from the dynamo. In the case quoted an omnibus seating ten persons, costing \$3,600, has traveled from Paris to the sea, a distance of 130 miles, and has for two months provided for the lighting of 40 lamps of 10 candle power, serving at the same time for daily journeys of considerable length. The total expense for lubricating and fuel oil has not exceeded \$1.50 per day. Compared with other automobiles, this omnibus, carrying a battery of 990 pounds and a generator of 330 pounds, appears to considerable advantage. For its weight does not exceed that of other electric carriages, and it is capable of covering 150 miles in a day, doing its 15 miles per hour, without exhausting the battery.

This installation must be of considerable interest to all who want an electric lighting plant or lighting and propulsion on economical and satisfactory lines.



Legal Notes

AGREEMENT TO PURCHASE LIEN.

DEFENDANT agreed to purchase of plaintiff a mechanic's lien, provided that it was a first claim on the property. Held, that the term "claim" included taxes, and that the existence of a prior lien for unpaid taxes released defendant from obligation to purchase. *Dodson vs. Crocker*, 94 N. W. Rep. (S. D.) 391.

ALLOWANCE FOR EXTRA TIME.

WHERE delays in the performance of a building contract were occasioned by the owner's change in the plastering from mortar to adamant, by which the contractor was relieved from the plastering, and the owner contracted with others for the work, which was neither done promptly nor in a workmanlike manner, by reason of which the contractor was delayed in finishing his work, he was entitled to a reasonable allowance of extra time therefore in computing the number of days' delay for which the owner was entitled to damages under the contract. *Vanderhoof vs. Shell*, 72 Pac. Rep. (Or.) 126.

ALTERATIONS—ORDER FROM ARCHITECT.

THE fact that alterations from the specifications for improvements to a building were made without a written order from the architect, as required by the contract, did not preclude a recovery where the owner was present at the time they were made, and consented thereto. *Perry vs. Levenson et al.*, 81 N. Y. Supp. 586.

APPORTIONABLE CONTRACT.

WHERE a contractor for the construction of an annex to a school building was to be paid on estimates to be made of the amount of materials furnished and work done, but the estimates were waived and payments were made as the work progressed, the contract was apportionable; and on the termination of the contract before full performance, by reason of inevitable casualty, the contractor was entitled to recover on a quantum meruit. *Krause et al. vs. Board of School Trustees of School Town of Crotherville*, 66 N. E. Rep. (Ind.) 1011.

ARCHITECTS—LICENSE FEE.

WHERE an architect has several contracts in another city, and pays occasional visits there to inspect his buildings and to see to the carrying out of the plans and specifications, he is liable for a license tax required by an ordinance of such city, if he intends to carry on his business there. *Wilson & Edwards vs. City Council of Greenville*, 43 S. E. Rep. (S. C.) 966.

ARCHITECT AS SUPERINTENDENT.

WHERE an architect also acted as the owner's superintendent of the work, and, on the contractor's complaining to him of delays caused by other contractors, the superintendent assured him that he was entitled to additional time therefor, and conceded the entire amount of time demanded; the fact that no demand for additional time was made on the architect in writing was immaterial. *Vanderhoof vs. Shell*, 72 Pac. Rep. (Or.) 126.

BATH TUBS—CONVERSION.

WHERE bath tubs, which were sold to a plumber under a contract conditioned that the ownership should remain in the vendor until full payment, and that in default he could take and remove them, were sold and placed in a building by the plumber, the vendor can not recover from the owner of the building as for conversion of the tubs without a previous demand for the tubs, or attempt to remove them. *J. L. Mott Iron Works vs. Reilly*, 81 N. Y. Supp. 323.

BREACH OF CONTRACT.

THE complaint by a contractor against the owner of a house for not letting him do the work thereon according to his contract should allege the character and amount of the labor which plaintiff alleges he did preparatory to the work, and that he would have made a profit, and the amount thereof. No time being prescribed in a contract to do work on a house, defendant in an action by the contractor against the owner for not letting him do the work is entitled to an instruction that the jury shall find for him if plaintiff failed to begin or prosecute the work in a reasonable time. *Andrae vs. Watson*, 73 S. W. Rep. (Tex.) 991.

RESIDENCE OF COL. HEMAN DOWD, SOUTH ORANGE, N. J.

THE residence which is illustrated on page 34 has been erected for Col. Heman Dowd, at South Orange, N. J. The underpinning is built of rock-faced red sandstone. The building above this underpinning is constructed of stucco, which is painted a Colonial yellow, while the trimmings are painted white. The roof is covered with shingles and is stained a deep Indian red color. The chimneys are built of red brick laid in red mortar. Dimensions: Front, 50 ft. 8 in.; sides, 68 ft. 6 in., not including porch. Height of ceilings: Cellar, 8 ft. 8 in.; first story, 10 ft. 3 in.; second, 9 ft. 3 in.; third, 8 ft. 3 in.

The house is planned with a central hall, with the various rooms located on either side. The hall has a vestibule with seats on either side, a paneled wainscoting, ceiling beams and an ornamental staircase made from special designs. The woodwork throughout is of birch stained mahogany.

The music-room, which is the principal room of the house, is spacious, and is trimmed with white pine, treated with white enamel. There are massive ceiling beams, and an open fireplace furnished with green tiled facings, white tiled hearth, and a massive Colonial mantel. On either side of the fireplace are paneled seats. The study, with its outside entrance thereto and opening into music-room, forms a convenient place when a musicale or entertainment is in progress.

The library is trimmed with oak, finished in an antique green. It has bookcases built in, a paneled seat and an open fireplace furnished with tiled facings and a hearth, and a mantel. The dining-room is trimmed with white pine, treated with white enamel. It has a paneled wainscoting four feet in height, a bay window with a seat and an open fireplace furnished with white enameled tiled facings and a hearth and a mantel. The flower alcove, opening from the dining-room, is an attractive feature, and the separation is artistically formed by Colonial columns supporting an archway. The butler's pantry is fitted with a sink, drawers, dresser, cupboards, etc. The kitchen is trimmed with yellow pine, and is furnished with all the best modern conveniences.

The second floor hall is trimmed with birch and is finished in mahogany, while the remainder of the house is trimmed with pine, and treated with white enamel. This floor contains five bedrooms, with ample closets, a linen closet, and two bathrooms; the latter are provided with a tiled wainscoting and a paved floor, and are furnished with porcelain fixtures and exposed plumbing. The third floor is finished natural and contains three servants' rooms and bath, and also two guests' rooms. The cellar is provided with a laundry, cold storage room, furnace room, bicycle room, furnace and range coal. Mr. Robert S. Stephenson, architect, 1135 Broadway, New York.

A SUMMER DINNER TABLE.

THE dinner was served in a white room overlooking a beautiful garden, says an exchange. It was the first week in June, and when dinner was served the room was still filled with golden evening light, and this, mingling with the rose-shaded candle light, formed a wonderful, opalescent atmosphere—and a lovely picture it made. Above the white tablecloth, and covering the top of the table, a smaller cloth was laid. The center of it was of rich, creamy Greek lace, then came a band of pure white linen (wide enough to run under the table service) and the whole was finished with a deep frill of Greek lace which fell over the edge of the table. The ornaments were in silver, in carved ebony, in crystal, and in jeweled Venetian glass, and the flowers were roses—heaps of lovely pink roses—and feathery maidenhair fern. The center-piece was a silver and crystal "Adam" epergne. It was placed on a delicately carved ebony stand and was filled with pink roses, cut with longish stems and exquisitely arranged. On each side of this center was a crystal candelabrum. They were old and of very beautiful design, with the most fascinating festoons of crystal chains and balls, which, swaying gently to and fro, caught the light. Next in order came two rose-laden silver bowls (also on ebony stands), and lastly, opposite the host and hostess, there were two perfect Venetian vases, their tall jeweled stems bearing crystal cups. There were also small flat bonbon dishes in silver-gilt, further enriching the effect, and the candles were shaded with soft rose.

Seen against the white, luminous background, the table simply glowed and sparkled, the touches of black giving it point and piquancy, and there is no reason why one should not use this decoration equally in a dark, rich colored room, simply changing the flowers from the deeper rose to a tender pink and blush white, or to lovely yellow orange and white Iceland poppies with sprays of airy gypsophyllum.

Flowers for table decoration are most effective when grouped with their own leaves.



The Houseboat

THE TRULY HOUSEBOAT.

THE truly houseboat is, or should be, an essentially domestic institution, a home afloat, preferably under petticoat government, and in its make-up giving the first importance to those arrangements and conveniences which appeal more particularly to our woman-kind. An average single-decker of, say, seventy-five feet water line and twenty feet beam, excellent dimensions for our Eastern coast uses, would or should contain some three chambers accommodating six people, a commodious saloon or living-room, giving in an emergency sleeping room for three or four more, a properly and completely appointed bathroom (two would be still better) and—mark this, ladies—closet room to an extent which few craft other than houseboats could compass. About amidsthips would come the owners' entry port (on the starboard side) and aft of that the roomy galley, the servants' entry port (on the port side), the storerooms, the larder and cold storage, the servants' bathroom and sleeping accommodation for from two to four people, for although a man and wife or even two women (if the owner could and would "run" his power or naphtha launch) would be all the "help" actually needed on a craft of this size; an extra berth or two might come handy, even if for only occasional temporary storage. Now, it must be evident, and if not it can be easily demonstrated, that this amount of accommodation 'tween decks however arranged must use up so large a part of the space contained within the given dimensions, that after provision has been made for anchor chains, mooring ropes, towing lines, dunnage and, often most important of all, the storage of water, the cubic contents of the craft will have been so utilized that no room is available for even the most compact method at present known for the production and use of mechanical motive power. It follows, therefore, that if such motive power is insisted on extra length of hull must be provided for its machinery, and this applies to a houseboat of any length whatever without regard to what its—so to call them—domestic dimensions may be.

If more money must be spent, which would be the wiser, to spend it in motive power appliances to be used only occasionally or in increased houseboat size and accommodation to be enjoyed all the time? If there is even possibility of motive power and its uses proving out of harmony with that reposeful sentiment which attaches to the truly houseboat, it is wise to risk that possibility and in the cost of extra length, of special construction of hull, of the motor machinery itself, and of the more or less skilled labor required to operate it, to pay—heavily maybe—for the privilege.

As to sail power, if your houseboat is planned as it should be to give within the least cubic dimensions the greatest sum of homelike domestic convenience and comfort, the result must be a model so bluff in the bow, so full in the stern, so flat on the bottom, so high in the sides, and so shallow in the draft, that sail power becomes if possible even less desirable than a mechanical motor. In fact, to work such a craft by sail power would require a stress of wind and press of canvas for which its model and construction should be alike unfitted. Perhaps the use of another houseboat comfort-destroyer, a centerboard, might enable you, if not too close-hauled, to fetch within some measurable distance of the point intended, but even that could not be assured unless you should also make such changes in form and construction of hull, and such sacrifices in economy of interior arrangement, that it would be far wiser to abandon the houseboat idea and build a roomy yacht, and have done with it.

You can not perfectly combine houseboat comfort and sailing enjoyment in one craft, but if you will separate them, and be content with the perfection of the first on your floating home, and of the second on your—say—twenty-five footer, you will escape as to the former the inconveniences of masts coming through your cabin spaces, the necessity of stronger construction for your hull and upper works, and the work and trouble entailed by shrouds, sheer-poles, halliards, sheets, stays, and of the sails themselves, and will arrive at a combination wholly satisfactory from the housewife's and from the yachtsman's standpoints, and for which our home waters are peculiarly fitted.

A houseboat should not be in any constant sense a peripatetic, but the sailing houseboat and the power houseboat are likely to—nay, should—be of that class, or why the more expensive model and construction, why the added cost of any kind of self-propelling method at all?—Frank W. Weston in Boston Transcript.



THE IDEAL KITCHEN.

The ideal kitchen, said a recent lecturer, has a tiled floor, or linoleum floor covering; the walls of tiles, glazed brick, or hard plaster; plenty of cupboards with glass doors or none. It has a large, firm, zinc-covered table, ample sink room, the sink itself being set on legs, with all its pipes and traps exposed to view, according to the best sanitary method. No hiding-place is left available for dust or vermin. The kitchen has a sun exposure, with windows on all sides possible. There is an opening in the chimney over the range, and a hood to the range, to prevent the cooking odors from pervading other parts of the house. This is the ideal kitchen which "eternal vigilance" never fails to keep a safe reasonable central point.

As to furnishings, there is a place for everything, and everything in its place—a hackneyed but very effective fashion of order. All the utensils needed around the stove are near and within easy reach. The shelves hold plenty of tin boxes, with tight-fitting lids, for yeast cakes, spices, tea, coffee, and so on. Hampers or bags for soiled towels and aprons are conveniently disposed. There is nothing superfluous. As William Morris says, kitchens are about the only rooms furnished in good taste, because all the articles there are of good shape, declare their use, and are appropriate to it.

A window corner in the kitchen may well be made available, with an easy chair, for chance moments of rest, for the cook, who is practically on her feet all day. Indeed, such a corner in a new model kitchen in a beautiful home has been occupied nearly every morning this winter by the blind grandmother of the family, an old-fashioned woman, wonted to her own kitchen, who has found this sunny, comfortable spot a positive luxury, and the kitchen radiance of heat preferable to register or radiator or even open fire.

SCIENCE IN THE KITCHEN.

A HANDY kitchen thermometer, points out a contemporary, is now among the supplies for the use of cooks of scientific mind and for novices as well. With the thermometer's aid the exact time for slipping a cake into the oven can be told. The precise moment can be determined when the eggs should be entrusted to the water, and one can ascertain whether or not the heat is too great for the pot roast or the delicate stew.

A kitchen microscope is also among the new devices. In the washing of salads, of spinach and other vegetables, of grapes and various other fruits, and in deciding as to the state of meats and what process of cooking they had best be subjected to, the microscope does good service.

The household indicator is another convenience. It is a tally board that acts as a messenger between the cook and the grocer's boy. On the indicator is listed the entire category of supplies needed in kitchen matters, from matches, salt, soap, to eggs, butter, bacon, and flour. There are smooth little pegs to be fitted to the small holes opposite each item on the list. If the cook when preparing a meal finds that the salt is low she sticks a peg into the indicator to indicate the quantity of salt to be ordered. She also sets a peg opposite each item as the various needs crop up in the day's work. Work over, she just puts the indicator on the table where the boy can see it when he comes, and is free from any more bother in the matter. Flat dwellers put the handy indicator outside the door, and then are free to go to walk or shop, knowing that the supplies will be forthcoming.

FUEL SAVERS IN COOKING.

A LARGE number of patent steamers for cooking made their appearance previous to the coal strike, says a Philadelphia paper, so that their merit of saving fuel is not directly traceable to the present necessity for economy. The principle of all these utensils is to utilize the steam produced by one pot, or pan, successively in a number of pans arranged one above the other. In one form the bottoms of the intermediate pans are perforated and the steam thus finds its way to the top. In one of the newest forms shown the steam of the lower pan, or kettle, is delivered to each of the pans by means of a short pipe connection which forms part of the several lids. These connections are adjustable one in the other, making a continuous steam main. The claim is made that three or four foods may be cooked at one time, and with the burning of a single gas jet, where gas is available, or a minimum of other fuel. The freedom from grimy pans is another of the merits of this plan of cooking.

RESIDENCE AT ST. DAVIDS, PA.

The residence which is presented on pages 36 and 37 has been recently erected at St. Davids, Pa. The building has an admirable setting on the wooded crest of a gentle slope which stretches on an uninterrupted greensward to the public road many hundreds of feet away. The sweep of the lawn is not even broken by the drive to the house, which enters the property at the side, and makes a long curve to one end of the building, passing to the back of it, under the porte-cochère and thence to the stable. This arrangement of the drive also gives entire privacy to the porch and terraces on the front or south side of the house.

The exterior of the building is constructed of rough-faced stone, which is almost a pine white in color, laid with white plain beveled pointing. The central portico, two stories in height, forms an imposing feature of the front, and a similar feature at one end affords an opportunity to place not only the glass-enclosed conservatory on the first floor, but a spacious covered balcony on the second floor.

From the porte-cochère, one enters a square vestibule, which has an effective treatment of columns supporting the stair landing. The pedestals of these columns project to receive large potted plants. The columns and woodwork of the wainscoting and seat are painted white. The floor is laid with Dutch red tile. Conveniently located at one side of the vestibule is a toilet room. A short flight of steps in either direction lead to the main hall.

The hall is trimmed with quartered oak, and the walls are paneled with oak from the floor to the ceiling. The ceiling is of open beam construction with wood panels. The staircase is of an ornamental character, rising from the center of the hall to a broad landing from which the stairs divide and rise in either direction to the second floor. The open fireplace has tiled facings and a hearth, and a mantel of Colonial style.

The reception-room is treated with white enamel paint. The library is trimmed with chestnut and the walls are paneled from the floor to the ceiling. The ceiling is of beamed construction and the spaces between are filled in with wood panels. There are bookcases built in with leaded glass doors and an open fireplace furnished with a tiled hearth and facings and mantel. From the library there is a private entrance to the second story, beneath which a private stairway descends to the cellar. The living-room is a cool apartment, with windows on either side and at one end. It contains an open fireplace with tiled facings and mantel. The dining-room is trimmed with mahogany, and the walls are paneled to the ceiling. The ceiling is beamed, with the spaces between filled in with wooden panels. There is an open fireplace with mantel, etc. The den is conveniently located.

The pantry, kitchen, and laundry have windows on the opposite sides, like the servant quarters above them, and are delightfully cool in the summer, and are entirely apart from the remainder of the house and yet are connected with it. Each is fitted up complete with all the modern conveniences.

The second floor is treated with white paint of an ivory color. There are six bedrooms and three bathrooms on this floor, besides two servant bedrooms and bathroom. The bathrooms are paved and wainscoted with tiles and are furnished with porcelain fixtures and exposed plumbing all nickelplated.

The third floor contains one large billiard-room, cedar closet, and two long storerooms.

The house has an ideal exposure facing slightly to the southwest; all the rooms have large windows carefully placed for light and air—those in the rooms on the first floor which adjoin the terraces having jib doors below.

Mr. David Knickerbocker Boyd, architect, Harrison Building, Philadelphia, Pa.

INGLE-NOOKS.

Two ingle-nooks are shown in the illustrations on page 35. The upper picture is from the residence of J. P. Phillips, Esq., Glen Ridge, N. J.; Mr. J. J. Petit, architect, 11 East Thirty-third Street, New York. The lower view is from the house of Charles G. Trautweiler, Esq., Ludlow, N. Y.; Mr. L. C. Holden, architect, 1133 Broadway, New York.

GRAY AS A COLOR.

GRAY, points out an exchange, is a more or less neglected color in house furnishing, but is really a most satisfactory tone for a light drawing-room or large sleeping-room. A papering of broad stripes of two shades of gray, or narrower strips of gray and white, crossed, perhaps, by a delicate green vine, makes a good wall covering. Ash wood furniture painted a soft French gray in dull or "mat" finish is not expensive and can be had in artistic shapes. The cane seats and backs should be white, as also the lines and carvings, but all in the dull finish.



THE COTTAGE WINDOWS.

THE new designs in window draperies may be counted literally by the hundred, says the Commercial Advertiser. To enumerate the various kinds of curtains for the country house, there is the always popular Swiss appliqué (Swiss by name, English by make) in nearly a hundred tempting forms. One of the newest and prettiest of these is the registered trellis and rosebud design, a style which harmonizes with either modern or old-fashioned furnishing. The medallion and wreath is another graceful pattern, while for dining-room or library are exceedingly handsome and effective curtains of heraldic type, which would harmonize well with massive furniture and heavy draperies.

Some of the Swiss curtains are simply bordered with the ribbon bow design, which is so pretty for bedrooms, while others have beautiful "all-over" patterns. In some of the appliqué curtains spotted net is used as a background, the designs adapted to it having a charming Brussels lace effect. Another variety of curtain is of the needle-run Saxon lace, worked with dainty floral designs.

The Marie Antoinette curtains, with their true lovers' knots and other pretty devices in lace braid, and embroidery upon net, are a style which always finds favor; and then there are the soft muslin curtains, tambour worked or embroidered, which may be draped artistically.

Short blinds, such as are used for casement windows, are made of silk and Renaissance lace, or of net, lawn, or linen. Until quite lately a drawback to the "brise-bise" was that it was only made in tempting range of choice for the embellishment of French windows. These, too, can be made in special sizes to fit windows of any peculiar shape. That charming development the *bonne-femme* shade is to be found from simple and inexpensive varieties to the most luxurious.

CURTAIN FADS.

COLOR runs riot in curtains, says an exchange, from the most subdued tints to the gayest of bright hues. This wealth of coloring gleams in sheer materials such as Chinese crêpe, Madras, and net. All the drapery textiles are thin, light, and airy. The new Chinese crêpe is entirely novel. It comes in dark background, rich in Oriental color and pattern. Varying shades of poppy red and sage green are favorites. The light backgrounds are fascinating in rainbow tints and pretty designs. This goods comes, also, in just two colors—blue and white, or green and white, either combination looking cool and refreshing. By setting the colors, and with care, these curtains may be laundered. Dry cleaning, however, is more satisfactory. The Chinese crêpe has more body to it than the other lightweight materials.

The Madras is simply bewitching in variety and tint—warm, rich backgrounds embellished with gayest of hues. As if in laughing defiance of the severe simplicity of quaint furniture, the glories of the sunset glint the room through these dainty fabrics. It is a popular fancy to use these materials for portières for doorways and open arches. The light through the deep colors or delicate shades of tan, green, pink, cream, or blue gives to this fanciful apology for drapery a magic charm.

For those who cling to white for chambers and yet desire a touch of color, there are beautiful satens, cretonnes, Java and India prints, to be used with white. Plain net or lace that can be purchased by the yard is used for a straight full curtain that hangs in loose folds to the window-sill. Then a width of fancy goods or one India print curtain is hung in close folds at each side of the window, and another strip, or single curtain of India print, gathered across the top of the window.

CABIN WALL COVERINGS.

FOR cabin wall coverings the handsomest, although not the most expensive, materials are jute and ordinary burlaps, in plain colors, of which almost every tint may be obtained. The favorites are natural hemp and wood colors, greens and deep reds. These colors are also to be had in denim, cotton rep, cotton and linen taffetas and tickings, either plain or figured. Jute and taffeta wall coverings also have self-toned figures and stripes, which are admirable for lounge, swing, or cushion covers. A woman in Lake Placid who did not care to use cloth upon her walls simply had light brown cartridge paper stretched over the logs that formed the inner walls of her cabin, and paneled it with strips of silver birch. A big silver birchwood box stood by an open fireplace.

Fire Protection

FIRES FROM ELECTRICITY.

In a recent paper on Electrical Fire Hazards, Mr. Washington Devereux reduces these to three causes as follows: (1) Short circuit—a current of low resistance—in which the current is hindered from reaching the end of its course, and from which no benefit is derived; (2) a leak, in which the current takes a wrong or an undesirable course; (3) the contact with parts which have become heated by the flow of current which at the time of heating may be a part of the circuit from the source of supply to the consuming device.

The great problem is now to secure safety, and this may be answered: By the proper methods of construction, using only high-grade material. Evidences of the lack of knowledge on electrical subjects are quite apparent—nails and screws driven into electric light molding, wires in contact with foreign metallic objects, fuses uncovered so that molten metal may fly about among inflammable material, and conductors so overloaded as to be perceptibly hot. The fire hazard should be always carefully considered in an electrical installation. A system of electric wiring may be ideal from an engineering point of view, and yet as a fire hazard would be most dangerous. Under skilled workmen, however, who know what conditions should be observed and observe them, "electricity is as safe as any source of power, and the safest source of light known to mankind."

STILL ALARMS.

EVERY year, says an exchange, the reports of chief engineers from all over the United States show an increasing number of telephone and still alarms sent in during the year. Indirectly a decided compliment is paid to many local departments by that same fact. It shows that the people are getting over their fear of calling in the department when a blaze first starts. In the good old days, before the times of the chemical engine, a visit from the department meant a flood of water. Now, however, the hand extinguishers are used first, and then the chemical engine, while the regular streams are not utilized, except in cases of necessity. With only trained men on hand, the citizens are glad to open their doors to the firemen, knowing that they will do their work as quickly as possible and with as little damage as possible. There is another reason for an increase in the number of still and telephone alarms in smaller cities and country towns and villages. People have learned that an alarm sent in from a box and sounded on the whistle, when it happens to be working right, always brings a crowd of sightseers, who frequently get in the way of the regular firemen, and do more or less damage in their attempts to help the fire-fighters. The day is not far distant when the fire alarm whistle will be abolished everywhere; and it will be an excellent thing. When the fire department is enlarged sufficiently to have enough regular men on duty at each house, so that there will be no necessity for "call men," the whistle will be no longer needed.

EXTINGUISHING INCIPIENT FIRES.

The question is often asked, says Fire and Water Engineering, as to what steps should be taken to extinguish an incipient fire. While by no means depreciating the value of fire extinguishers, and advocating their presence and use in every building, the underwriters insist strongly on the value of the old-fashioned fire-pail. Thus, Mr. William Anderson, Superintendent of the Board of Survey of the National Board of Fire Underwriters, on being questioned as to the value of the fire extinguisher, replied: "The Board considers the fire-pail the best extinguisher!" He added: "First call up the fire department, in case of fire, and then use the ready pail." Mr. Everett U. Crosby, the Secretary and Treasurer (and one of the organizers) of the National Fire Protection Association, and a recognized authority, when asked the same question, said: "The reports of our association show the water pail to be a better fire extinguisher, and we are now completing designs for one which will be the standard." The replies, of course, refer only to fires in their most incipient stages. Calling out the fire department, as a rule, is a safe course to adopt on every occasion. The use of the fire pail is commended because of its handiness and simplicity. But not seldom an incipient fire from its very nature defies the efforts of the water carriers, and the fire pail and the extinguisher must be called into use. Its service should be combined with that of the fire pail—thus rendering assurance doubly sure. But the immediate summoning of the fire department should never be neglected.

LIFE IN SUMMER PALACES.

If America is short on castles, says the New York Sun, she certainly has no lack of magnificent country houses, extravagantly equipped with every modern invention that spells comfort and luxury. The summer palaces at Lenox and Newport, in certain parts of New Jersey and Long Island, up the Hudson and elsewhere, may not include the haunted chamber and subterranean passages of European castles, but nothing else that money can purchase is lacking.

Not long ago a house erected in Westchester for a newly married New York couple was described by the architect as including fifty suites of rooms, each containing a private bath. Another country house in the Wheatley Hills on Long Island, put up lately by a New York millionaire, has a stable with accommodations for one hundred horses. One Newport household includes forty servants, another at Lenox has thirty-two. These facts are indications of the scale on which these country homes are maintained.

No privations are suffered in these days by people who visit at country houses. Yet there is a drawback to all this luxury. A most trying feature of it all to some good old-fashioned folk is that one may scarcely break bread in these establishments, let alone pass a night there, without a special invitation.

Despite an equipment of servants large enough to handle any probable party of guests, the old-time jolly, informal way of having a wagon load of friends or relations drive up to spend the day and night is frowned upon by the modern fashionable hostess. Informal and spontaneous hospitality may still be had in plenty among the summer homes of America, but it is generally found in less pretentious establishments. The etiquette of the summer palaces demands that visitors shall come only when they are asked and stay not an hour longer than the time stated in the invitation.

An English woman, who spent the greater part of last summer in this country, told a friend that one of the most impressive features of the country houses of the rich over here was the clothes closets, and, furthermore, the conveniences these closets contained for women guests who came perhaps just for a night and without their full complement of baggage.

"We have nothing like these closets in England," she confessed. "Why, in two houses in which I have visited in my bedroom there was a hanging closet lined from top to bottom with satin, each peg supporting a cross tree wadded and perfumed and covered with satin."

"There was also a closet with a mirror door, the top divided into half a dozen squares, like bonnet boxes, to hold hats. Below were shelves finished like the trays of a trunk, which could be pulled out and shoved back. These were to hold waist hats. The very lowest part of the closet, to about the depth of a foot, was divided into pigeonholes for holding shoes and slippers. Every inch of this closet, like the other, was lined with striped satin. In the hanging closet of the first of these rooms I occupied, and which was lined with rose color and white striped satin, I found, as I swung the door open, an exquisite rose-color silk kimono, and in a pocket against the inside of the door a pair of heelless rose-color Japanese slippers. I learned that the appointments of every guest room occupied by a woman included the same garments, which in every case matched the upholstery of the closet."

"But the closets in the guest room were not a circumstance to those I found in the rooms of my hostess, which were very unlike the portable wardrobe affairs we have in England. They were closets built into the wall, paneled with mirrors, illuminated with electric bulbs, and included shelf after shelf for lingerie, for finery of every kind, even parasols."

"The parasols, in fact, in one instance had a whole closet to themselves. It was divided into two tiers, so that each parasol might stand upright, top and handle slipped into round holes in the bottom and the top of the closet and in the partition shelves that crossed it midway."

There is one question, though, in connection with these American summer abodes of luxury which threatens seriously to disturb the equanimity of many of the fortunates who are bidden from time to time to visit them. In fact, it is ruffling their serenity even now.

This question is fees. Although Americans have had independence enough to get away from the English country house breakfast, it would seem that they have not yet had the courage to give up the practise of feeling which prevails in England. Only English servants don't expect and don't get fees so big as the servants over here. Neither do they get as big wages, which is one excuse perhaps for giving them fees at all.

In America it seems "some fool people"—as an exasperated hostess put it the other day—"will send \$20 or \$30 to the cook after a stay of a week or two at a country house, and other servants get fees in proportion. Of course only the very rich can be so generous."

Sanitation

HEATING AND SANITARY INSTALLATION OF A SUBURBAN WINTER HOUSE.

THE following account is abstracted from a summary, printed in the Engineering Review, of the heating and sanitary installation of the new residence of Mr. Spencer Trask, at Tuxedo Park, N. Y., intended for winter use: The heating system is a hot-water direct and indirect system with overhead circulation. It is supplied by an ideal heater, from which the flow is taken directly to the tower, in the upper chamber of which is the expansion tank. Thence the circulation system is carried through the peak of the attic, by a horizontal 4-inch main, from which branches extend down the sides of the house to the radiators. Over the hall and library, however, there is an open-timbered roof, and the radiators in that end of the building are, therefore, fed by a separate upward supply and circulation system from a header in the basement. The hall, dining-room, library, and study are heated by air supply, gravitating over hot water stacks in the basement. Mixing dampers are controlled at each inlet.

The air inlets in the hall, library, and dining-room consist of a recessed shrine or alcove in the bottom of which a wire register is fitted, and within the walls of which a statuette or candelabrum is intended to be placed, entirely concealing the opening. The radiators are mostly placed under window seats, arranged with inlet registers at the front, the heated air passing up the back of the seat, through a register level with the window-sill. When the family is away, the unoccupied portion of the house can be cut off.

The sanitary system presents some features of interest. The general arrangement consists of a house-drain extending through the basement to the last riser, this riser then being carried clear up to the top of the tower, as a vent relief to the line. The soil risers, being only one and two stories high, are vented by two-inch branch vents from the fixture traps, and are not required to be carried up full size through the roof.

The Tuxedo Park Association has formulated plumbing regulations which require a separate discharge for the sinks, tubs, and refrigerator wastes. This is provided in a separate three-inch line receiving the discharge of kitchen sinks, laundry tubs, and slop sinks, and these fixtures are separately vented to the roof, not being connected in any way to the soil system.

The disposition of the two lines outside the house is laid down by the regulations.

The cold and hot water supply systems are laid out in the same manner as the heating system, whereby the unoccupied portion can be cut off, and the pipes drained if required.

The building is lighted by electricity, and is wired throughout in accordance with modern fire-proof methods, this work also being planned by the engineer. The alternating supply of the Tuxedo Park Association at two thousand volts is entered through the basement through an iron tube into a transformer vault, and the transformed current is distributed from a panel on the outside wall of the vault to three centers of distribution in the house. The wire is run in Sprague flexible steel conduit. The panel boxes are steel lined, built by Zindars & Hunt.

The bell system is elaborate, comprising calls from all points.

CRUDE SEWAGE TREATMENT.

AN English report draws the following conclusions on the bacterial treatment of crude sewage: 1. That by suitable continuous undisturbed sedimentation the raw sewage is deprived of matter which would choke the coke-beds, and the sludge which settles out is reduced in amount by bacterial action to a very considerable extent. This reduction might be increased by the preliminary removal of road detritus. 2. That the coke-beds, after they have developed their full purifying power by use, have an average sewage capacity of about 30 per cent. of the whole space which has been filled with coke. 3. That the sewage capacity of the coke-bed, when the bed is fed with settled sewage, fluctuates slightly, but undergoes no permanent reduction. The bed does not choke, and its purifying power undergoes steady improvement for some time. 4. That coke of suitable quality does not disintegrate during use. 5. That the "bacterial effluent" of settled sewage from the coke-beds does not undergo offensive putrefaction at all, and never becomes offensive. 6. That the use of chemicals is quite unnecessary when the above method of treatment is adopted.



BRICK, STONE, AND TILE.

BUILDING BLOCK. F. Bandler, Brooklyn, N. Y. June 2	729,535
BRICK. J. L. Braun, Pittsburg, Pa. June 2	729,918
TILE. A. E. Klay, Lima, Ohio, June 2	730,151
TILING. T. F. Furness, Philadelphia, Pa. June 2	
Design. 36,343, 36,344, 36,345, 36,346, 36,347, 36,348	
ARTIFICIAL STONE. J. T. Sallied, Denver, Col. June 8	730,479, 730,480
MANUFACTURE OF TILES, SLABS, OR THE LIKE. G. Kunick, London, England, June 9	730,775
TILING. ORRAT BETTENDON, NEW YORK, N. Y. June 9	
Design. 36,356	
FLOOR OR WALL TILE. L. R. Blackmore, Arlington, N. J. June 15	731,153
TILE COVERING FOR FLOORS, WALLS, ETC. B. P. Leslie, New York, N. Y. June 16	36,370
ARTIFICIAL STONE. W. Ower, Woking, England, June 23	731,608
HOLLOW CONCRETE BUILDING BLOCK. Appleman and McDuffie, Plymouth, Mich. June 23	732,152
ARTIFICIAL STONE. Bell and Leet, Montreal, Canada, June 30	732,674

CARPENTRY.

CARPENTERS' SCAFFOLDING. E. A. Kuntz, Dayton, Ohio, June 2	729,608
REVERSIBLE WINDOW SASH. J. C. Robb, Carob, City, Cal. June 2	729,665
WINDOW. F. Voigtmann, Chicago, Ill. June 2	729,814
WINDOW SASH AND FRAME. G. B. Determann, Louisville, Ky. June 2	730,005
WINDOW. D. G. Ednie, Edinburgh, Scotland, June 9	730,243
WINDOW. W. A. Brackett, Boston, Mass. June 16	730,867
WINDOW. J. Volkmann, Cleveland, Ohio, June 16	731,006
WINDOW FRAME AND SASH. J. C. McMahon, Pittsburg, Pa. June 23	731,600
WINDOW SASH AND SILL. Brooklyn, N. Y. June 23	731,847
WINDOW. T. Sulick, Duquesne, Pa. June 23	731,963
SCREEN AND SPOON DOOR. M. J. Breyer, Montpelier, Iowa, June 30	732,274
TONGUED SASH. E. Hippolito, Los Angeles, Cal. June 30	732,298
WINDOW. R. F. Stark, Homestead, Pa. June 30	732,456

CONSTRUCTION.

FLOOR AND CEILING CONSTRUCTION. J. Schratwieser, Brooklyn, N. Y. June 2	729,790
METALLIC WINDOW FRAME AND SASH. C. McSherry, Pittsburg, Pa. June 2	729,885
BUILDING CONSTRUCTION. J. P. Angell, Pine Bluff, Ark. June 2	729,913
BUILDING ROOF. H. F. Langewiesche, St. Louis, Mo. June 2	730,080
COLUMN. G. J. Fahl, Paterson, N. J. June 2	730,150
PORTA UT COLUMN. A. Mertes, Emsworth, Pa. June 2	730,191
BUILDING FOLDING SHED. T. M. Laswell, Harris, Mo. June 9	730,275
FLOOR CONSTRUCTION. J. C. D. June 9	730,616
BUILDING WALL AND CONCRETE BLOCK FOR SAME. Miracle and Dow, St. Louis, Mo. June 9	730,780
GLUED JOINT FOR TURNED COLUMNS. J. Neill, Orange, N. J. June 9	730,780
CAMBERING OR SPRINGING DEVICES FOR ARCHES OR BEAMS. W. M. Burdon, Bellshill, Scotland, June 30	732,164
CONCRETE COLUMN. W. N. Wight, New York, N. Y. June 30	732,485
CONCRETE STRUCTURE. A. A. Firestone, New Pittsburg, Ohio, June 30	732,535

ELEVATORS.

ELEVATOR SAFETY DEVICE. G. Hall, Providence, R. I. June 2	729,575
SAFETY DEVICE FOR ELEVATORS. P. Benditz, Columbus, Ohio, June 16	730,865
ELEVATOR MECHANISM. A. Cowperthwait, New York, N. Y. June 30	732,522

FIREPROOFING AND FIRE EXTINGUISHMENT.

TENSION ROD FOR FIREPROOF CONSTRUCTION. J. B. Hinchman, Denver, Col. June 2	729,937
FIREPROOFING CONSTRUCTION. W. F. Wilmoth, New York, N. Y. June 2	730,200
AUTOMATIC FIRE ALARM. D. D. Beaulieu, Erie, Canada, June 16	730,863
FIREPROOF FLOORING. N. Poulson, Brooklyn, N. Y. June 16	730,963
FIREPROOF CONSTRUCTION. N. Pellgreen, St. Louis, Mo. June 16	731,216
FIREPROOF FLOOR. W. N. Wight, New York, N. Y. June 30	732,482, 732,483, 732,484
FIREPROOF FLOOR CONSTRUCTION. W. L. Lewis, Washington, D. C. June 30	732,091

HARDWARE.

SASH LOCK. G. A. Bell, Norwalk, Conn. June 2	729,916
SASH BALANCE. M. Blount, St. Charles, Mo. June 2	730,094
HINGE. G. R. Hill, Bartold, Mo. June 9	730,265
SASH LOCKS. F. J. Hoyt, Chicago, Ill. June 9	730,266
DOOR LOCK. A. C. Wether, Trenton, O. June 9	730,593
LOCK. J. Loch, Brooklyn, N. Y. June 9	730,581
HINGE. B. W. Christ, New Britain, Conn. June 16	730,876
SASH HOLDER. L. T. Weaver, Atrani, Fla. June 16	730,996
SASH LOCK. A. E. Ayer, East Boston, Mass. June 16	731,266
SASH LOCK. J. D. Miller, San Antonio, Texas, June 16	731,317
HINGE. J. St. Ambrose, Brooklyn, Mass. June 16	731,359
DOOR LOCK AND ALARM DEVICE. W. N. Greer, Greeley, Neb. June 30	732,067
LOCK. L. Neischof, Milwaukee, Wis. June 30	732,451

HEATING AND VENTILATION.

HEATING DEVICE. J. Sosenheimer, Gallon, Ohio, June 9	730,578
RADIATOR. J. R. Wortherspoon, Philadelphia, Pa. June 9	36,355
STEAM HEATING SYSTEM. T. S. Hamilton, Louisville, Ky. June 23	731,776
VENTILATOR. T. A. Frame, Carlisle, England, June 30	732,290

MISCELLANEOUS.

DEVICE FOR ILLUMINATING ROOMS OPENING ON LIGHTWELLS. N. F. Fox, Brooklyn, N. Y. June 2	729,600
SCAFFOLD BRACKET. B. B. Brown, Quincy, Ill. June 9	730,606
MANUFACTURE OF ORNAMENTAL ARTICLES FROM PLASTIC. E. F. W. Wainman, Philadelphia, Pa. June 16	731,254

PLUMBING.

BATH OR BASIN WASTE. H. M. Weaver, Mansfield, Ohio, June 2	729,710
FAUCET. F. H. Haverkotte, Cincinnati, Ohio, June 9	730,646
FAUCET. E. L. Walker, Scranton, Pa. June 23	731,639

TOOLS.

PLUMB LEVEL. D. N. Allard, Pomeroy, Ohio, June 2	729,521
CARPENTERS' VISE. G. W. Drew, San Francisco, Cal. June 2	729,741
COMBINATION CARPENTERS' TOOL. William Potter, New York, N. Y. June 9	730,568
CARPENTERS' GAUGE. J. Salinger, Martinsville, Ind. June 30	732,379

ROADS IN FRANCE.

MR. JEROME A. HART, the editor of the San Francisco Argonaut—than which no better or more entertaining weekly is published—has contributed to his paper some observations on things European. He makes the following notes on roadbeds and road repairs in the south of France.

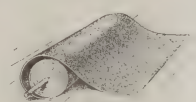
There are other things about the Corniche Road that excite the contempt of the practical American mind. As a national highway it is under the Minister of Roads and Bridges, one of the French Cabinet officers. Like all the national highways, it is divided into sections of a few hundred kilometers. Each section is in charge of a section man, who spends his entire time patrolling the road and mending it as soon as a break appears. He has all the necessary tools, while along the roadside are little piles of broken rock, pulverized to different degrees of fineness, with which to repair breaks at once. He is like a street sweeper on a city block, and on the block beyond him there is a man to attend to the next section. As I saw these poor purblind Frenchmen carefully mending little holes in the road—holes which we would leave alone until they developed into gullies and then "mend them next winter"—I could not but feel proud of the superior methods of my country.

Another piece of French folly was this: Every half-mile we would encounter a small two-wheeled sprinkling-cart about the size of a barrel, drawn by a lad. This at once provokes Americans to roars of laughter; it is such small business and so ridiculous, don't you know, to sprinkle a road two hundred miles long with a sprinkler the size of a barrel. True, this barrel was stamped "Villefranche," which is a little town, and further back there was one stamped "Montone," which is also not a large place. All along the road there are many barrels. But we do better in our country. When the roads near a small town need sprinkling, the supervisors try to raise the money—and fail. They try to buy a big sprinkling-cart which, with horses and all, will cost about two thousand dollars—and fail. Then the citizens try to raise the money by subscription—and fail. Then the county papers take it up and try to raise the money—and fail. Then all hands bemoan the lack of public spirit and go to work to get the sprinkling-cart—and fail. Here the small towns get sprinkling-carts and do it by hand. It's true the operator is only an eighteen-year-old-boy, but in many of the small towns in our country the same boy would be loafing round the corner grocery chewing tobacco. However, a two-horse sprinkling-cart is a more imposing sight; perhaps the American way is the better way.

FEATHER pillows, if the covers are quite clean, are benefited by leaving out in a summer rain, afterward sunning them for several days on the clothesline. Down quilts may be treated similarly without the slightest danger of injury. There will be some shrinkage.

ASPHALT ROOFING AND ASPHALT PAINT.

FIVE kinds of roofing are manufactured by the Stowell Manufacturing Co., of Jersey City, N. J. A plain felt saturated with asphalt, a mica slate roofing saturated with asphalt and covered with mica slate, a cork roofing consisting of two layers of saturated felt with a layer of asphalt between and surfaced with granulated cork, and the same kind with carefully screened gravel instead of cork, and one surfaced with asbestos. Durability is one of the advantages of natural asphalt roofing. Asphalt may remain exposed for ages without alteration, being practically unchangeable in the atmosphere. It has body and tenacity, will not run, emits no disagreeable odor, and does not injure rain water. It is very desirable for foundries, round-houses, chemical works, etc., where the fumes of sulphur and other injurious gases quickly destroy many roofs. This roofing is made from Trinidad natural asphalt materials, and will not dry up and become brittle under weather exposure, from the fact that the



ASPHALT ROOFING.

oils are not volatile at any natural temperature, and are therefore permanent, adhesive, and strong. The Stowell Co. has every facility for making good roofing. The machinery is all of the very highest state of perfection, and insures uniform quality and thickness. The material is shipped in rolls securely packed and is always ready for immediate use. It can be quickly and readily applied, is adaptable to any style of roof—old or new, steep or flat. For consumers who construct their own roofs it is especially desirable, as no tools or implements are needed, only a knife and a brush being required to cement the joints.

Besides the roofings, the firm makes all kinds of asphalt products. An asphalt roofing cement, asphalt paving cement, black asphalt paint, and electric rubber roof cement for repairing leaks, etc. Asphalt roofing cement is put up in paste form and must be heated thin enough to apply with a brush or mop; it should be heated in an iron kettle over a fire. Do not use the cement when it has become chilled, but heat it again. Save what may be left over, as it is valuable if repairs are ever needed. Black asphalt roof paint is used extensively in every State of the Union. It withstands extreme heat or severe cold and has a tenacity and elasticity peculiarly its own. It is ready for use, easily applied, and protects and preserves any exposed surface. It is particularly adapted for tin and iron roofs, bridges, gas tanks, and underground pipes. Another well known product is the elastic rubber roof cement, guaranteed not to crack or become brittle, and is used for repairing leaks in roofs, around chimneys, skylights, dormer windows, copings, gutters, or elsewhere, and for securely fastening loose or broken slate, bedding, tile, etc. The roofings of the Stowell Manufacturing Company are economical, durable, fire and acid proof. The office and works are at Nos. 114 to 134 Culver Avenue, Jersey City, N. J.



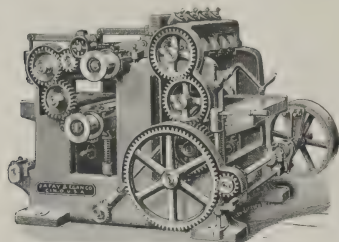
HAND POWER ELEVATORS.

MORE than one hundred thousand dumb waiters and hand power elevators now in use have been made by the Storm Manufacturing Company, of Newark, N. J. This extensive output is represented by apparatus with capacities ranging from ten pounds to two thousand pounds. A dumb waiter for light work, twelve inches square, especially adapted for carrying letters and papers from one floor to another, and for light use in restaurants, cafes, etc., being the smallest lifter, while a carriage elevator is the largest, with four thousand pounds capacity. Between these great extremes simple, durable, economic, and convenient waiters and elevators are manufactured for many purposes and in various styles. A very useful and popular machine is the "New York Safety Dumb Waiter." It can be set up by any mechanic. It lifts easily fifty to seventy-five pounds, and is particularly adapted for meal serving. The "Paragon Self-Retaining Automatic" is a dumb waiter made in sheaved or geared style, and it lifts from one hundred to five hundred pounds. The "Paragon" is so constructed that it will hold the car stationary at any point without the use of brake or rope clamp. It works easily and with perfect safety, for the moment an operator ceases pulling the hand rope, either raising or lowering, the clutch will hold the car in place. The "Manhattan" dumb waiter has a capacity of two hundred pounds. The shafts of this fixture run on babbitt metal bearings. They are frictionless and noiseless, handsomely bronzed and strongly made. The dumb waiter is equipped with a hand

NEW DOUBLE CYLINDER PLANER.

The machine which we herewith show our readers has lately been introduced on the market, and is giving good results to all those using it. It is designed for all wood workers in general, and is recommended by the makers very highly for all those who have planing to do. It has embodied in its construction many improvements and labor-saving devices whereby it may be easily operated. It was patented December 19, 1899, and February 6, 1900, and among its many points of attention is called to the following:

It will plane 24, 27, or 30 inches wide and 6 inches thick. Has patent sectional feeding-in roll in four sections, with each section center-gear, and gear driven downward. Each section of the roll is entirely independent of the other in its action, accommodating great variations in thickness, so that when planing two



No. 31 DOUBLE CYLINDER PLANER.

or more pieces of uneven thickness at the same time each is brought forward and given an even pressure, the roll making any variation desired. The cylinders are brought close together, insuring the best results on either short or long stock.

The strength and effectiveness of this new planer will readily recommend it to all those having heavy work to do.

The upper feeding-out roll lifts parallel for different thicknesses. The feed is powerful and uniform, and can be instantly started and stopped by the operator. The lower cylinder and receiving plate after the same, draw out endwise to easily set knives. Sectional weights are provided for feeding the rolls.

Those who are interested in this machine should write to the maker J. A. Fay & Egan Co., of Nos. 207 to 229 West Front Street, Cincinnati, Ohio, who will cheerfully send full particulars. The Company will also send free its new complete catalogue of wood working machinery.

GREENHOUSES.

We are pleased to call public attention to a recent catalogue issued by Lord & Burnham, of Irvington-on-Hudson, N. Y. The company's object in this publication is to give an idea of the grace and beauty which it is possible to attain in the construction of greenhouses, and to furnish a basis for correspondence to those who propose their erection. This firm has probably the largest works in America devoted to greenhouse building, including foundry, boiler, and machine shops, wood working mill, carpenter and paint shops, fitted with the latest and special machinery in every department, and many years of experience in designing and building greenhouse structures of every kind prepares it to offer patrons materials of the first quality and finish. On hand is kept a large stock of cast iron gutters, sills, and other finished and unworked materials, which greatly facilitates the execution of orders. In the machine shop all complicated structures are set up and the respective parts are numbered to fit their proper places. The dock space enables the firm to keep the largest stock of air dried cypress and assortment of sizes to be found in the North. Only this kind of lumber is used, and it is found that when properly treated it is superior to any other. Many of the most important improvements in greenhouse construction are due to this company. It introduced small sash bars with supporting frames, to increase the light; it was the first to adopt long lines of ventilators in place of scattered ones, thus avoiding drafts injurious to plants; and the first in roof construction to use the Gothic style of curves as contrasted to the circular. Its arm, rod, and worm-gear ventilating machinery was invented by the late Mr. F. A. Lord in 1856 and has been used universally throughout the country ever since. This firm was the first to use ground glass in conservatories, and the first to substitute cast iron gutters and sills for wood in connection with wooden frame greenhouses. Iron frame supports for beds and tables were introduced by it even before the use of the modern iron framing. This style has been very much improved, and the use of wood has been reduced to the least amount found to be practical or economical for general purposes. Improvements in construction have been going on for many years under the expert management of this old establishment, until

it may be safe to claim that these greenhouses embody art as high as any yet attained in horticultural architecture. Lord & Burnham Co. designs, manufactures, and builds complete greenhouse structures of every description, or furnishes material and plans so that parties can have the erection done by local mechanics; prepares without charge suitable plans and submits them, together with specification of superstructure, ventilation, plant, tables, etc.; inspects locations when necessary so as to make advantageous plans, and sends workmen, after the shipment of the material, to complete the erection in every detail.

Another catalogue, Lord & Burnham's latest, is just published. It is devoted to greenhouse heating and ventilating. This issue contains many new pages showing additional patterns added to its former list of cast iron pipe fittings for calked joints for two inch, three and one-half inch, and other sizes of pipe; a full line of pipe chairs and hangers for all kinds of greenhouses, new patterns for ventilating apparatus, the latest patterns for "Burnham" sectional steam and water boilers, and a complete line of "Burnham" boilers, etc. The success of these boilers has demonstrated that the principle upon which they are constructed is correct. They have received the hardest test which could be given any boiler, having been operated in many instances with chimneys less than twenty feet in height where the radiation was distributed over a large area, the maximum height of which in many instances was not over four feet above the top of the boiler. All work, including the boring of holes to receive taper nipples, and also the turning of the nipples, is done by especially designed machinery, the result being that all parts are interchangeable. This makes it easy to set up the boilers, and when placed, every joint is permanently tight, the whole presenting a neat and workmanlike appearance. The catalogue shows many pages descriptive of cast iron heating pipes and fittings, fittings for wrought pipe, vapor pans, expansion tanks, iron columns, pipe headers, and automatic air valves, etc., and it will be mailed to any inquirer on receipt of five cents to cover postage. The address of Lord & Burnham Co. is St. James Building, Broadway and Twenty-sixth Street, New York, N. Y.

PAINT FOR ROOFS AND IRONWORK.

The Joseph Dixon Crucible Company, of Jersey City, N. J., is the manufacturer of the well-known compound called the "Silica-Graphite Paint." This material is



GATEWAY TO THE WIDENER MANSION.

serviceable for the preservation of ironwork, and especially so where the metal is used in elaborate gateway, fence, and other ornamental work. As the paint is produced in four colors there is no difficulty in obtaining artistic effects. The beautiful iron gateway to the P. A. B. Widener mansion, at Ashbourne, Pa., shown in the accompanying illustration, is a very fine example of the high-class of work on which this silica-graphite is used. Black is the color applied to this gateway. To show its durability at sea side resorts, we mention that Haddon Hall, Atlantic City, N. J., is painted with graphite roof paint. For the past six years this compound has given the proprietors perfect satisfaction. The paint is of one quality and is adapted for use against the injurious effects of the sun, rain, and snow on the wooden shingled house as well as the great tin roof of the Wanamaker store in New York. The compound should be procured in original packages, ready mixed for use. No. 68 Reade Street is the New York address; No. 26 Victoria Street, that of London, England.

REVERSIBLE WINDOWS.

The originator of the Hayes Skylights and other architectural and mechanical appliances has added a reversible window to his list of important inventions. While the device meets the requirements of the skyscraper, where the risk of life in cleaning windows, hanging blinds and awnings at extreme heights is greater than heretofore, it is nevertheless a necessity

and convenience for use in every class of buildings. The outside of this window is made to turn completely to the inside of the room in a very simple manner, thus obviating dangerous exposures in exterior window work, and at the same time it facilitates exit in case of fire, and does not lose its popular and practical feature of raising and lowering sashes. This invention is readily applied to



IN REVERSED POSITION.

window frames now in use without disturbing the frame or trim; it permits blinds, mosquito netting, and awnings to be applied in the same manner as to any other window, and it is adapted to sashes hung with weights operated by cords and pulleys. In the reversible window manufactured by the George Hayes Company, No. 71 Eighth Avenue, New York, N. Y., the rigid frame is of wood, metal encased, the swinging frame and sashes being hollow. The swinging frame may, however, be made of wood and metal encased, but the sashes made by this company are always hollow, as this construction makes them more secure. The sashes of this very effective fire-retarding window are glazed with wire glass and are provided with the Hayes automatic closing devices. Mr. Hayes made the first fireproof and fire-retarding window glazed with wire glass, and since the test made on repeated occasions by the Building and Fire Departments and the Board of Fire Underwriters of Newark ten years ago, and public tests made in New York in 1901, it has been rated as thoroughly reliable in resisting any attacks of fire. The George Hayes Company also manufactures metal skylights and other glazed structures, metal lathings, etc.

METAL FURNITURE.

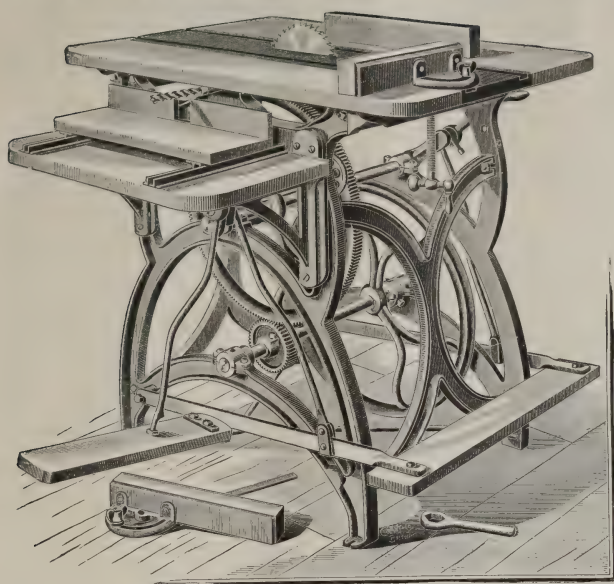
The Berger Manufacturing Co., of Canton, Ohio, a leading manufacturer of steel, has been among the first to take advantage of the improvements in and cheapening of the process of steel production, and to adopt it as the material of construction in many lines in which it never before had been used. One important result of this enterprise is the making of steel furniture for office equipment, furniture that is strong, durable, graceful, and economical, unaffected by even the extremes of cold or heat, dryness or moisture, and fire, water, dust, rat, mouse, vermin, warp, and crack proof. A real protection to valuable documents, it is eminently convenient and safe, and may be truly said to be the "armor plate of modern business." By a special process of its own the firm has arrived at a very beautiful and artistic finish for this furniture; it carries a high gloss and yet is very durable and difficult to deface. The intention in turning out these various specialties of metal furniture is to make them an ornament to any office outfit, and as the tendency in modern taste seems to favor simplicity, especially in articles for commercial uses, the design of the manufacturer is to make them sufficiently fine, through grace, neatness, and finish. The material used is the best quality of pickled and cold rolled steel, specially selected for the purpose. The furniture is put together to stay indefinitely. Every known artifice for welding and connecting different parts of metal has been strenuously put to the test and the most successful retained and adopted in the construction. The largest filing cabinet made by the Berger Company has a capacity of 120,000 letters 12 x 10 1/2 inches in size. The largest steel index case has twelve drawers holding 12,000 cards. The case here- with illustrated will contain 4,000 cards. The half flat and flat top desks, also made with steel roll tops, are produced in various sizes and with different arrangements. Library tables, from the plainest to the most elaborate design, to suit surroundings, are trimmed in brass, bronzed or plated. Standing tables, chiffoniers, metal counters, wardrobes, document files, library stacks and shelving, stairs, galleries, and safety deposit boxes are a few of a long list of fixtures the firm makes in steel, and to indicate the further output of the great plant at Canton, Ohio, we may state that the company has issued many special catalogues of steel goods, of which those of metal ceilings and side walls, multiplex fireproofing, roofing, siding and special work, metal shingles and tile, metal house, well and spray pumps, and lamps, lanterns, etc., are prominent. The address of the Berger Manufacturing Company is Canton, Ohio.



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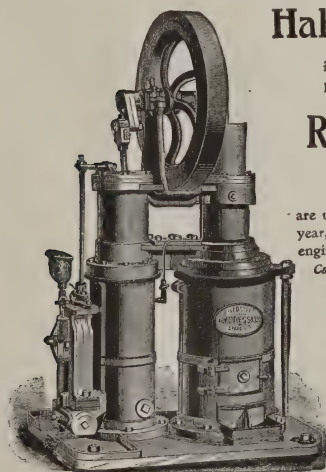
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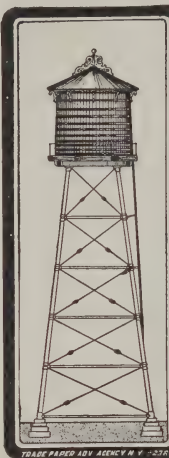


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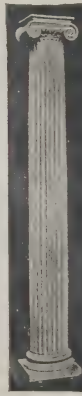
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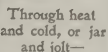
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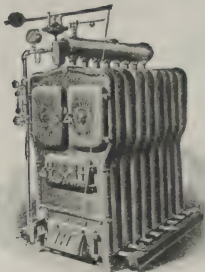
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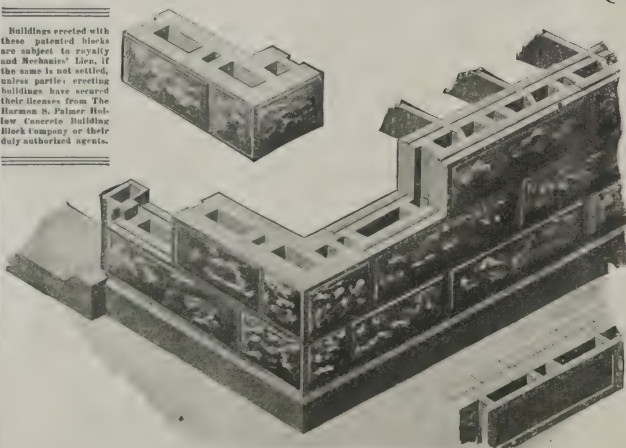
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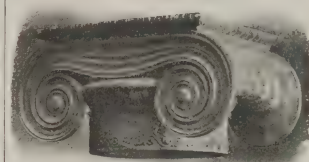
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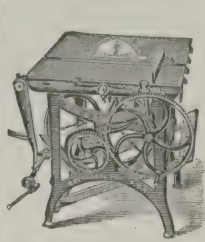
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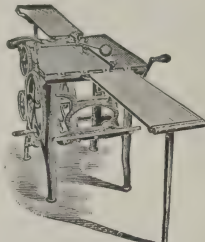
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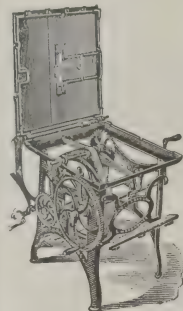
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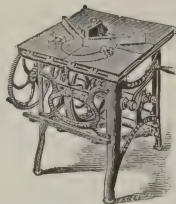
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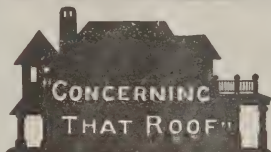
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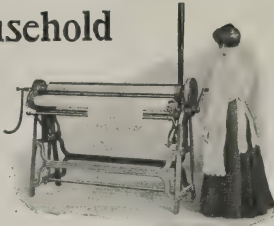


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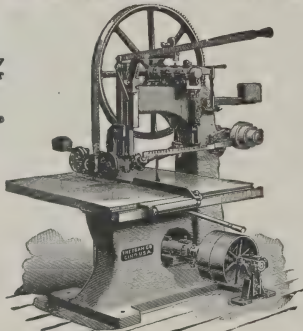
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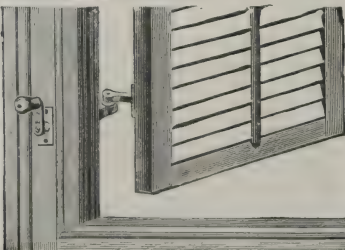
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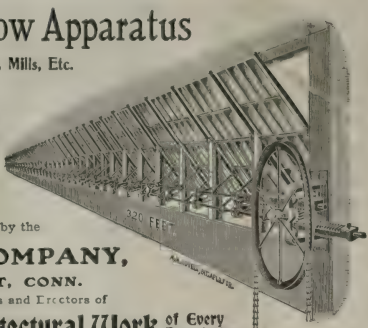
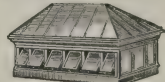

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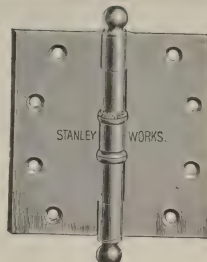
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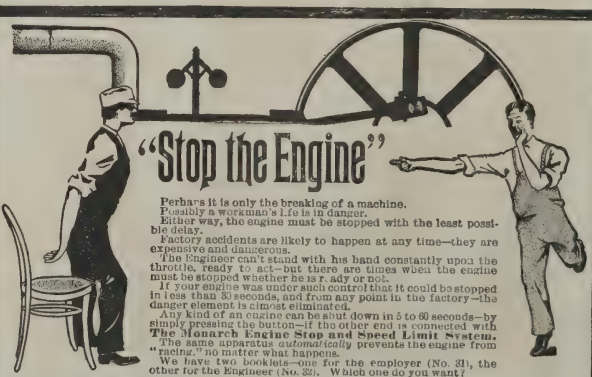
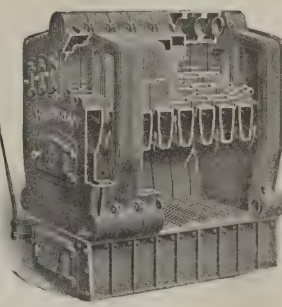
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*The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

PRESIDENT ELIOT, of Harvard University, some time ago designated architecture as perhaps the most learned of the professions. This is unquestionably true, although the corollary that architects are the most learned of men does not, unhappily, hold true. Yet how varied architecture is in its interests is apparent from a syllabus of a school course in hygiene, prepared by Dr. Henry A. Kelly, Director of the Department of Science of the Ethical Culture School in New York. A portion of this outline, so far as it relates to site, grounds, and the school building, is worth reproducing as an illustration of the very many subjects a single type of building is concerned with.

Site and Grounds: Location, size, soil, drainage, arrangement of grounds, trees, playgrounds, sand-pile, garden, relation to other buildings, etc.

The School Building: Architecture—construction, height, size of rooms, floor space, basement, furnace room, assembly hall, offices, recitation rooms, laboratories, studios, shops, library, gymnasium, baths, teachers' room, lunch room, emergency room, halls, cloak rooms, toilet rooms, etc.; stairways, stairs, treads, risers, landings, balustrades, floors, trim and walls, entrances to class rooms; lighting—natural and artificial, luxur prisms and factory ribbed glass, size and arrangement of windows, relation of floor space to light area, aisles, shades, blackboards, fire escape, entrances to building, etc.

Heating—methods, stoves, hot water and steam, direct and indirect; ventilation—gravity and mechanical, vacuum and plenum, ventilation by windows, airing the school room, measuring ventilation, composition of air, effect of impurities, tests, place and size of inlets and outlets, filtering of air, temperature

of school room, humidity, dry and wet bulb thermometers.

Cleaning rooms, seats, desks, windows, etc.; disinfection and disinfectants; toilet rooms, kind, number, plumbing; water supply, filtering, boiling water, sanitary fountains, drinking cups; school baths; water analysis.

FRENCH architects have devoted a good deal of time and thought to establishing their rights to their designs. It has become rather the fashion of late years for architects to imagine they had property rights in the designs of the buildings comparable to the rights generally recognized as belonging to painters and sculptors. This contention rests on quite debatable grounds, but meanwhile it is of interest to note how far the French architects are now prepared to go. The Société Centrale des Architectes Français—the great general body of French architects, and the most important architectural organization in France, has adopted three rules on this subject of more than ordinary interest. The first declares that the architect has the right to forbid the reproduction by photography of any building of which he is the author. The second stipulates that in case of such reproduction and its sale the architect can exact his claim as author. The third imposes the publication of the name of the architect in connection with all reproductions.

For a number of years the progress of great buildings in large cities has been so persistently upwards that the fact that a coordinate extension downwards has been in progress at the same time has generally been lost sight of. It is not unnatural that this should be so, since the upward extension is visible, while the downward movement is entirely underground. Yet this underground movement is a most important one. Underground railroads need, of course, no comment; but the general public is, perhaps, not so familiar with the vast underground parts of our great hotels and office buildings; restaurants underground are quite common in New York, and even an underground theater has been spoken of as within the probabilities. The department stores fill considerable space beneath the earth's surface, and underground auditoriums have been proposed for public school buildings. The demand for space in the great cities is so imperative that every possible advantage must be availed of.

THE FAMILY AND THE HOUSE.

THE house is the center of the home and the kernel of the family life. The house is built for the people who live in it, and the people who live in it make the family. It is not only eminently fitting, therefore, to consider the house in its relation to the family, but, in an almost literal sense, it is well nigh impossible to consider the one without the other. Good houses do not, unfortunately, always make bad people; but bad houses inevitably lead to an unfortunate family life that seriously affects the occupants.

The essential qualities of a good house are comparatively easy of definition. They include good environment, good situation, proper attention to environment and situation, good construction, good planning, sufficient accommodation, as plentiful a supply of modern conveniences and helps to good living as funds and circumstances will permit, and a suitable esthetic form, whose value is exactly proportioned to its intensity and its truth. Absolutely some of these requirements may, perhaps, be more important than others; but in a general sense their relative value is nearly equal. Bad houses, of course, have qualities exactly the opposite of those houses that are rightly entitled to be called good.

It must be obvious that those houses thus designated as "good" must, if their perfection be real and thorough, exercise an influence on their inmates. The contents of our prisons, the endless processions that move across the floors of our police courts, are not drawn from the people living in good houses, but from those that swarm in bad ones. It is true enough that criminals are sometimes found in excellent surroundings, but that only increases the hideousness of their crimes and emphasizes more distinctly the influence that good houses are, even in the popular mind, supposed to exert on those who live within them.

And this influence is not the less potent because it may be exercised in an unconscious way, and those directly affected by it may be unaware of its power. It exists, and always will exist, and it is one of the predominating influences in civilization. It is the home that makes a people, and it is the house that makes the home; it depends on the family whether the mute architecture, translated into domestic building, will be an element for good or not. Why else the stern fight against the tenement? Why else is the slum cleansed? Why else is the movement toward the suburbs and the countryside?

The house is the key to the family life. Here the

children are born and raised. Here youth grows into manhood, girlhood into womanhood. If the home is attractive, the children will be bound to it; but an attractive home is impossible in an ugly, badly-planned, stupid dwelling in an unpleasant locality. Good men and women have, indeed, come out of exactly such environment; but these are the exceptional men and women. Human life is beset with too many pitfalls to render it wise or safe to take chances in the home-environment.

The truth of the matter is that the relations between the house and the family life are so close that one can hardly be considered apart from the other. Here, if anywhere, union is strength. The good house and the good family go hand in hand. The house is what it is; the family is the moving part, the mind, the soul, the will, that determines the development of the home.

Yet all homes are not alike. The conditions which hold for one family will not be those best suited to develop another. The home life of the great mansion, in which the time of the mother is occupied with necessary social demands, in which the children have a separate wing of the vast house, with their own army of servants and attendants, with their own sports, their separate pleasures, is essentially different from the home life planned on simpler lines, in which the mother is in daily and hourly contact with her children, where the household work is performed by one or two or no servants, and where there is little thought but that which centers in the welfare of the growing young ones. Here are two distinctly opposite kinds of family existence, determined, in most cases, by the social status of the parents, which, in its turn, is dependent on the parental wealth or lack of it. But a serious wrong is done if it is contended that one way is the right way and the other a crime against society and the family. Such a comparison indicates only a distorted notion of the meaning and reality of social conditions. Since civilization began, some people have had more means than others; some have always lived more expensively than others; some find entertainment and occupation in ways of life that are strange and unknown to their fellow-men; some people have always had better houses, larger houses, more splendid houses, than others.

And that is the testimony that architecture bears to family life. The size and extent of the dwelling, its situation and environment all point to the manner of people who live in it; and could the outsider see within further testimony would be given of the way in which the house lends itself to the family life and interprets it.

But the relationship of the family to the house does not end with the parents. They begin the home; they start it on its career of family life; they set the pace. The children develop it. The responsibility of the parents is never extinguished; but there comes a time when the home expands under the united influence of parents and children, and its fullest and finest development is reached when their union is earnest, hearty, whole-souled, and real.

The home life reaches its full flower when the young people begin to take an interest in the house as the house; when attachments are formed for localities and buildings; when one's own room becomes a matter of consideration, and its adornment and furnishings a matter of personal pride with each occupant. The girl is apt to think more of these things than the boy; the girl's room is never an impossibility, while the boy's presents problems whose solution is often impossible and always difficult. But the boy may have a rightful pride in his own home and his own abiding place exactly as the girl, although different in kind and in degree; and when this interest has been really aroused, the house, as the center of the family, will take on new interest and have new value.

Much of the resources of the modern architect in house building are directed toward increasing the homeliness of the house. A convenient plan is the first essential of a pleasant, comfortable interior; a good plan distributes the rooms and parts of the house so that a scientific and healthful disposition of the parts results; a good plan means that the rooms are properly disposed and an economical disposition made of the interior space. The equipment of the kitchen, the furnishings of the cellar, the arrangement and distribution of the sanitary apparatus, the mechanical contrivances that are used, the science employed—all these help in making the house a better one to live in; family life is eased; there is more comfort and more joy. Whether the differentiation of rooms that is now sometimes made is always for the better is perhaps doubtful. Every house does not need every sort of a room, nor is it always necessary that a separate room shall be provided for doing every separate thing in. But the ideal house is the one that is best suited for the family life that is lived within it. And if these requirements are healthy and normal, the house becomes a potent agency for good living and good citizenship.

TALKS ON ARCHITECTURE

BY BARR FERREE.

A MORNING AT HARBOR HILL: THE MACKAY ESTATE AT ROSLYN, N. Y.

The lodge gate at Harbor Hill is a pleasant little structure hardly more than around the corner from the station; but as the house is more than a mile within, a carriage is a very welcome mode of locomotion on a warm summer's day. We drove rapidly in, the guard at the gate saluting as we went past.

An eager question gave me the information that the property comprised from 500 to 600 acres; but I did not realize then, nor for some little time after, just what this amount meant in extent, nor how varied and beautiful were the lands whose area had been so roughly stated. A broad drive, splendidly made, wound up the gentle hill toward the house. Grassed terraces, with shrubs and roses and young trees, all planted with scrupulous care in selection and group-

yond this again are flower beds for the growing of flowers for house use; and then the roadway marks the end of the property in this direction.

Another driveway led to the farm barn, a gigantic structure of wood and brick, simple and unpretentious in design, but eminently direct and purposeful. The great central hall is used for the storage of hay and other fodder; separate wings are devoted to the farm horses, to the cows, to the wagon shed, to the property room, to the tool house—the manifold industry of farming, here carried on on a large scale, is so subdivided and classified that each part has a place for itself, and each object, each industry, is in its place. Beyond the barn is an old farmhouse, a genuinely antique house such as is frequently found in Long Island, but here so large and good, and in such excellent preservation, that the Mackay family lived in it while the palace on the hill was in construction. Doubtless there are grander comforts in the grander house, but the farmer whose lot it is to live in the

though farming industries were so rapidly passing under my eye that it is difficult to keep track of sequence. Here, again, was a completely separate establishment—a cottage for the Head Chickener—the title I invented,—chicken houses galore, two sets of them; one for young chickens raised on the motherless system, another for ordinary fowls, a laying house—a glance within at the filled nests gave it away without explanation—and an incubator house, completed the plant of this section. Within the incubator house were a number of machines, stove and apparatus for mixing and cooking food, and a chicken fattener, a complex apparatus guaranteed to produce wonderfully expansive results, although it had not yet been put to use. Not far off was a small pond, with many ducks and a couple of swan; hundreds of ducks were resting from the labors of life under the apple trees close by. Other departments of the estate included a dairy, close by the farm barn, and a polo stable, for the ponies kept by Mr. Mackay.



THE ENTRANCE DOORWAY, HARBOR HILL, ROSLYN, N. Y.—THE ESTATE OF CLARENCE H. MACKAY, ESQ.

ing, bordered the driveway; beyond were the trees of the forest, growing where they had always grown, with untrimmed grass in the foreground, and the natural underbrush beneath the trees beyond—quite the most natural combination of art and nature.

Presently the house itself came into view—a vast stone structure set on the highest land of the estate, which is also said to be the highest spot on Long Island. A pair of sculptured lions guarded the entrance of the drive, with a stately row of trees beyond. But we did not stop, for we were first to visit the grounds, and my attention was speedily concentrated upon the succession of wonders I was shown.

The Harbor Hill estate is so large that a variety of rural industries are carried out on it, each separated from the other, and so wholly distinct as to seem separate pieces of property. The conservatory and greenhouses were first visited. Here plants are grown for decorative purposes in the house. A separate structure is provided for the winter housing of bay trees; and beyond the main conservatory, agreeably filled with palms and ferns, is the fruit orchard—young as yet, but full of luscious promises. Be-

old farmhouse has his days cast on pleasant lines. He has a charming house, large and big enough for the biggest family that ever delighted a farmer's heart, and beautifully environed with trees and lawn, and admirably kept up.

Mr. Mackay's fondness for dogs is shown not only in the noble pedigree of many of his animals, but in the extensive kennels he has built for their housing and care. The plan of this group of structures is semicircular, with a house at either end of the semicircle. In one lives the caretaker; in the other is space for the attendants, rooms for preparing the food of the dogs, and rooms for washing them. Then, behind, are the kennels, comfortable little brick houses, with enclosed runs beyond, with wooden shelters for day's use. The dogs set up a terrific uproar when I appeared, and even the smiling youth who showed them off and pointed out their excellencies, could not quiet them. I hastily departed, partly because I am partial to quiet, and partly because I feared my conversation might betray my utter ignorance of dogs and ways doggish.

I think it was the chicken farm which came next,

Interesting as it was to visit these seats of rural activity the pleasure of the trip was heightened by the extraordinary beauty of the property, the fine drives, the beautiful trees, the clumps of crimson ramblers, the flowering wild roses, the masses of ferns, the far vistas that one got of distant points from favorite spots of vantage. Admirable drives led to each of the places I have roughly noted, and, in addition, the estate includes about ten miles of bridal paths, most of which are wide enough for a light carriage to drive through.

We turned into one of these, and in an instant the spirited black horses were whizzing us through the cool woods, down steep inclines, then up again to higher grades. There was barely room for the carriage to pass between the trees, and the grades were so steep I wondered the carriage brakes held. It was a veritable "scenic railway," with all the excitement of the ups and downs, but with real scenery, wild and beautiful. It was without suggestion of house, save it was Mrs. Mackay's rustic cottage, deep in the woods, but placed just where the look across country is finest.

(Concluded on page 60.)



FOUNTAIN AND STATUES.



THE TERRACE.



THE STABLE.

HARBOR HILL, THE MACKAY ESTATE AT ROSLYN, L. I.—See page 47.
MESSRS. McKIM, MEAD & WHITE, ARCHITECTS.



MRS. MACKAY'S BOUDOIR.



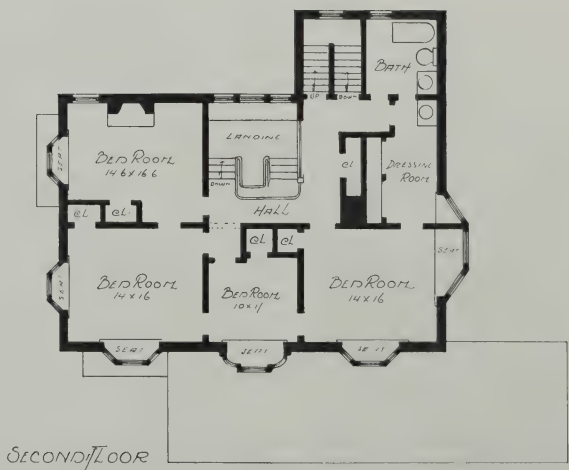
THE STAIRCASE.



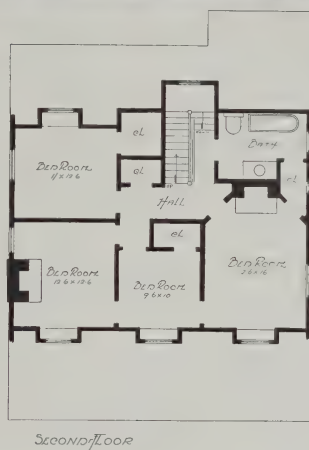
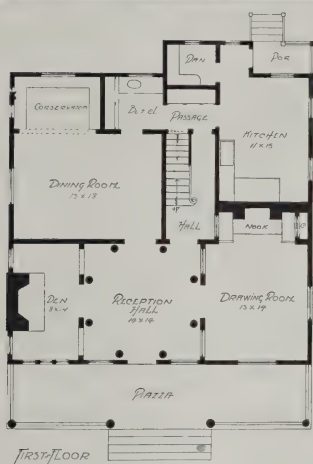
MRS. MACKAY'S BEDROOM.

HARBOR HILL, THE MACKAY ESTATE AT ROSLYN, L. I.—See page 47.

MESSRS. McKIM, MEAD & WHITE, ARCHITECTS.



A RESIDENCE AT SOUTH ORANGE, N. J.—See page 63.
MR. JAMES E. BAKER, ARCHITECT.



A RESIDENCE AT FLATBUSH, BROOKLYN, N. Y.—See page 62.

MR. JOHN J. PETIT, ARCHITECT.



Fig. 1.—The Cherokee Rose.



Fig. 2.—The Yucca.



Fig. 3.—The Organ Cactus.



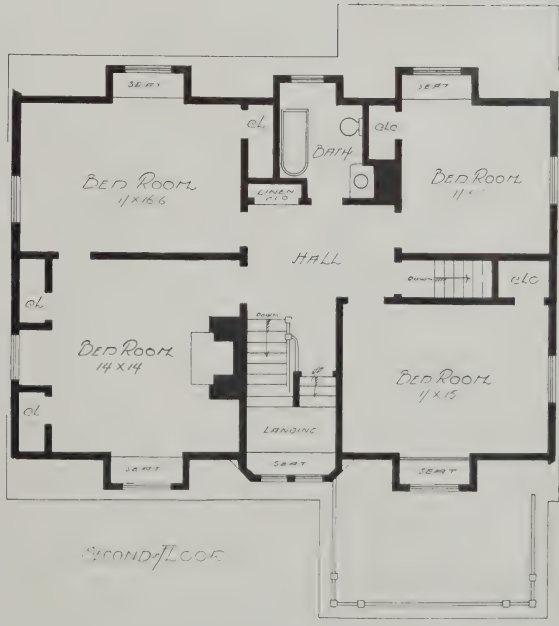
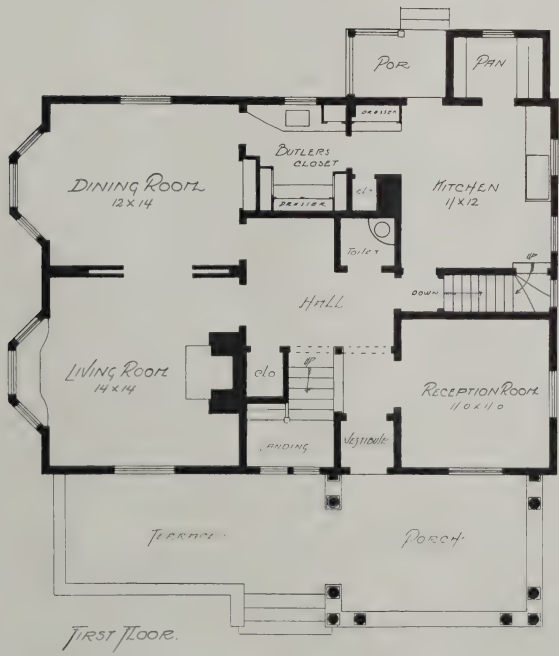
Fig. 4.—The Calla.



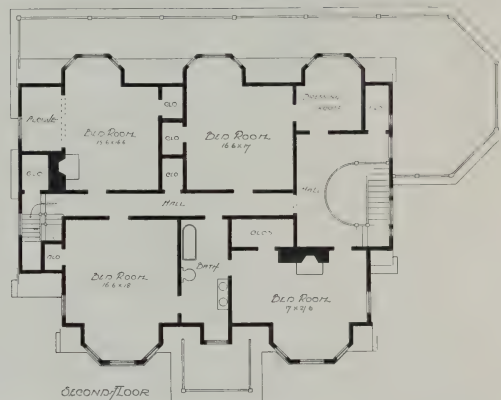
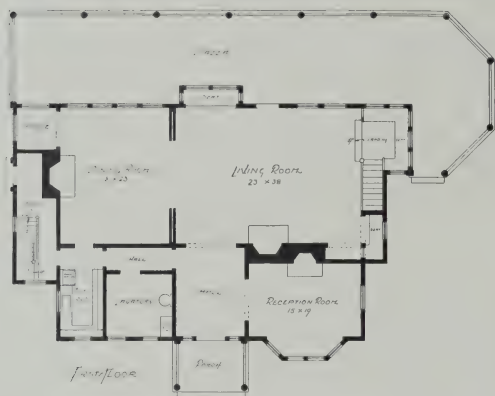
Fig. 5.—The Century Plant.



Fig. 6.—The Eucalyptus.



A RESIDENCE AT SPRINGFIELD, MASS.—See page 62.
MR. G. WOOD TAYLOR, ARCHITECT.



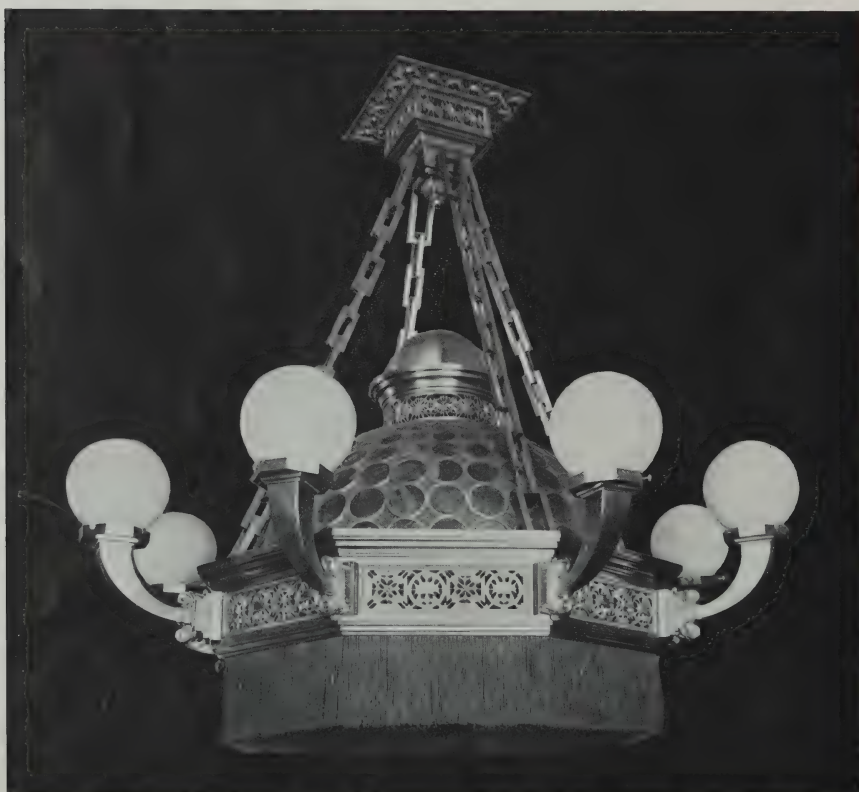
A SUMMER HOUSE AT NANTUCKET, MASS.—See page 63.
MESSRS. BALL & NABNEY, ARCHITECTS.



A SUMMER HOUSE AT NANTUCKET, MASS.—See page 63.
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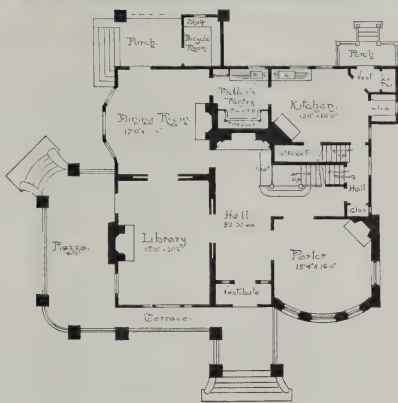


FIXTURES IN THE HOUSE OF F. A. LONG, ESQ., HACKENSACK, N. J.

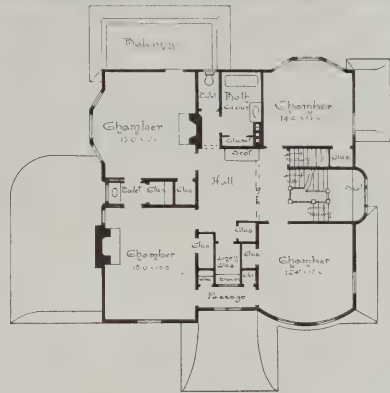


FIXTURES IN THE RESIDENCE OF A. B. LEACH, ESQ., SOUTH ORANGE, N. J.

GAS AND ELECTRIC LIGHT FIXTURES.—See page 65.



First Floor Plan.

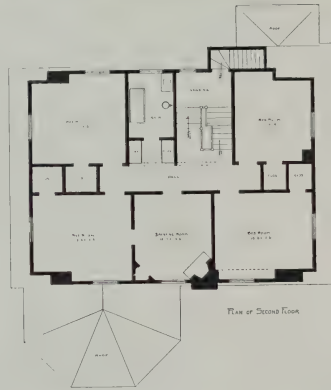


Second Floor Plan.



A RESIDENCE AT MONTCLAIR, N. J.—See page 64.

MR. A. F. MORRIS, ARCHITECT.



SUMMER HOME OF HERBERT LUCAS, ESQ., SOUND BEACH, CONN.—See page 64.

MR. HERBERT LUCAS, ARCHITECT.



SUMMER HOME OF HERBERT LUCAS, ESQ., SOUND BEACH, CONN.—See page 64.
MR. HERBERT LUCAS, ARCHITECT.



THE CARE OF TURKISH RUGS.

WHEN sweeping a Turkish rug, says an exchange, always use the sweeper or broom in the direction the warp runs, otherwise you will find the dirt dragged out of the sweeper instead of being taken up. In closing a house for the summer the rugs should be shaken, washed, if they have not already been treated to their annual bath, then rolled up with tobacco, camphor, cedar shavings, or moth balls, and closely covered with newspapers and unbleached muslin sewed about them.

NEW SUGGESTIONS FOR BATHS.

SELF-ADJUSTING rubber baths that jump into shape at the turning of a screw are now brought out, says a contemporary, with stands that allow of their being raised or lowered at will.

The bath that serves the purpose of both bath and trunk is a favorite. Of composition stuff that is outwardly the color of leather and with a close-fitting cover that shuts down overlapping like a trunk lid, this bath is eminently presentable when strapped taut and duly labeled. Tourists fond of out-of-the-way places take along one of these traveling baths and are happy and independent.

Some individual baths have been made of aluminum. Papier maché affords some good designs. Others are of Japanned ware and various makes of tin and zinc, porcelain or glass lined.

Glass is being used considerably for bath and toilet apparatus. Its purity and its delicacy of appearance are a great commendation. Towel racks of glass are on sale, and so are comb and brush racks, soap trays, toothbrush holders, sponge racks, and entire bathroom sets.

A few of the newer bathrooms in fine homes are fitted with bathtubs of glass, the practice having been tested in Germany for some time. The glass for this purpose is put through a treatment that gives it special strength and thickness without detracting from its appearance.

Over twenty different sorts of individual baths exclusive of the rubber baths and infants' baths are now in use. Some are of a pattern from far Bombay and others of styles adapted from various hot countries. English models lead, with the Canadian adapted from the English a close second. A bathtub of maple, originally designed, is contrived so that when transverted it becomes a chair of pleasing exterior. Another bath of medium size could be changed when desired into a tabouret.

WHITE GLASS.

SIMPLE white glass in graceful shapes, says an exchange, is at all times most satisfactory for table use. From time to time one may be attracted by iridescent novelties and delicately tinted shapes, but one is sure to turn again to the clear crystal. Those who have inherited the old, heavy, cut glass from Colonial grandmothers are fortunate indeed, but for those who have not a very desirable imitation of it, it is procurable at many of the best glass and china shops. Then there is the "feather" glass, one of the most beautiful of the uncolored glass. The shapes are blown with thoughtful carelessness, so that there is a slight and delightful irregularity in form and edge which, combined with the suggested "feather" in the body of the glass, gives a most artistic result.

OLD WALL PAPER DESIGNS.

THERE has been an interesting revival, says an observer, of old designs in wall papers, the original blocks being used, in some cases, for the reprinting. The old-fashioned landscape papers once used in halls are shown, and are considered very effective in combination with Colonial-shaped mahogany furniture. Pictures can not be hung against such paper, and for this reason it might better be used as a deep frieze. Other old-fashioned designs are of botanically impossible, but cheerful in color baskets of fruit and flowers. These are especially good for country house decoration. Before buying wall paper it is an excellent plan to carry home large samples of several designs in order to test wearing qualities. Some papers fade quickly in the sunlight, and others are ruined by the gentlest dusting.

THE familiar willow pattern plate has been copied in blue and white chintz. The whole story of the hapless Chinese lovers appears. The prettiest of summer pillows are made of this chintz.

A MORNING AT HARBOR HILL: THE MACKAY ESTATE AT ROSLYN, N. Y.

(Concluded from page 47.)

The property is not a cultivated park, but an admirably kept wood, with just enough roads and paths to make it accessible and enjoyable. It reminded me more of Chantilly than of almost any other place I have visited; but this resemblance was rather in its quiet woodiness and its perfect calm; for Harbor Hill has none of the cultivated wealth of Chantilly, with its trimmed walls of foliage and its many works of art. But Harbor Hill has charm, and distinctive charm, and it has much of it—quiet, penetrating, peaceful, restful.

Thus back again to the house, which had been the objective point of the expedition. Designed by Messrs. McKim, Mead & White, it is a stately, dignified composition, the somewhat severe front being graciously relieved by the fine carving of the doorway. It is built of a pale, delicate gray stone of delightful tone and color.

The door quickly opened, and as I passed into the great cool gray hall which filled the center of the house, I forgot the heat without. This central hall is two stories in height, paneled throughout in oak, with oak columns and pilasters and coffered ceiling. The windows opposite the entrance looked out onto the head of Hempstead Bay, a beautiful view, and like all others here, full of peace and quiet. The chief adornments of the hall are four sets of old oak choir stalls from a church in Europe, finely carved and beautiful works of art.

The planning of the house, from our present point of view, was simple enough. In the center is the hall, in which we are standing; at the entrance, stretching away right and left, is a wide corridor, at the left end of which is the main stairway—oak, like all the woodwork in the open public parts of the ground floor, with a heavily carved railing; from the ceiling of the uppermost story hangs a great bronze lamp—a late renaissance masterpiece finding final resting place in this newest of American great houses.

Did I speak of the vast chimney-piece in the central hall? Let me do so now, and add that all the chimney-pieces on the main floor are old ones, the spoils of European palaces, and very fine and interesting examples they are. The one in the hall is by far the largest of the collection, and is so huge that the wood of a single tree can be burned within it.

On the right of the hall is the dining-room, with pantries and kitchen beyond—the latter in a separate wing,—and the billiard-room; on the left is the room known as the library, and the white drawing-room. The library was first entered. Most of the books have been taken elsewhere, but the name remains, and a wonderful apartment it is. The walls have a high paneled dado of polished wood below a covering of green stripes. Rare tapestries cover much of the wall space; above is a coved cornice of polished wood. There is much furniture in the room—a piano in one corner, a fine old French table near the fireplace, desks and tables, tables with lamps and tables with bric-à-brac, and a veritable garden of plants and palms. The whole room is surrounded with growing plants; great garden vases filled with fine specimens stand before two of the windows; mammoth Boston ferns, palms in the corners and by the windows; and yet the room is so large that there is no sense of overcrowding, and the plants are arranged in a truly decorative manner and in exquisite taste.

The white drawing-room can be entered from the library as well as from the hall. It is cool and beautiful in color, although all in white. Panels of mirrors fill spaces not occupied by doors; and of windows there are none at all, for the room opens into an enclosed porch or conservatory to which, indeed, it is, in a sense, an antechamber. The furniture is of white, with caned seats and backs, covered with tapestried cushions; two great jardinières with caned sides stand before the doors to the conservatory. Over a console, filling one of the great panels, is a portrait of the mistress of the mansion, a lovely speaking figure.

The conservatory beyond was another bower of flowers, palms and hydrangeas furnishing many happy notes of color and form. White furniture here, also, with red cushions; red carpet in the center; matting at the ends; glazed brick for ceiling. The room is really an enclosed porch, a long rectangle, and looking out onto an open porch, with stone columns and red brick floor. Beyond is the Italian garden; not, as yet, it is true, laid out; but a graceful fountain fills the center, and a row of statues on either side hints what the immediate foreground will be when time and care have brought this portion of the grounds to maturity.

The dining-room and billiard-room, on the other side of the central hall, are both noble apartments, for there is a splendid sense of space in this great house; the rooms are large, the windows ample, the ceilings well lifted above the gay humanity that frequently

crowds beneath them. Each room has its individual note and treatment; the dining-room is paneled throughout.

An electric elevator took us upstairs. We visited first the top floor, one-half of which seems given up to nurseries. But if the space seems large, it is because the rooms are large, and the two children of the house have separate rooms for themselves and their attendants. Very pleasant these rooms are, in cool, quiet colors and fine furnishings, in which the quality of appropriateness has been very happily caught. All these apartments are communicating, and can, at the same time, be completely isolated from the rest of the house. Guest rooms, arranged in pairs, with a common bathroom, fill up much of the remainder of this floor, although some space for servants is found here, together with storage closets; the cedar room for my lady's dresses is, I fancy, the largest and best appreciated of these.

The second floor contains the apartments of the master and mistress of the house, together with some additional guest rooms. The latter are slightly more elegant than those above, but have the same amplex of size that distinguishes all the rooms of the house. Mr. Mackay's rooms consist of his bedroom, finished in a cool shade of green, and a sitting-room, transformed, for the nonce, into a place for exercise.

A separate hall leads to my lady's apartments. Here, at last, was the queen's chamber, the intimate home of the active mind that dominated the creation of this palatial residence, and the vast estate connected with it. Here dwelt the great lady for whom the house was built, whose own taste had wrought many of its perfections, and whose present personal oversight was the vivifying force in the kingdom she has created for herself in these pleasant Long Island woods.

A great curtain hung across the hall, the further end of which was enclosed as an anteroom. Like the other rooms of this suite, it was carpeted, curtained, paneled, and furnished in mauve, a beautiful, gentle hue that at once gave distinction and grace to the rooms. The boudoir or sitting-room opened immediately from the anteroom; it is a large room, thronged with furniture, curtained and walled with my lady's color, and richly decked with the thousand and one articles—choice pieces of furniture, vases, lamps, pictures, bric-à-brac, books, and, above all, plants—which every great lady finds comforting to existence. Opposite the doorway is a canopied couch, over which hung a rich ermine robe—a truly royal throne for the queen that rules here.

Mrs. Mackay's bedroom came next, and then the bathroom, with its famous bath chiseled out of a single piece of rich marble and let into the floor; a room unlike any bathroom I had seen before or hope to see again; rich furnishings, lamps, easy chairs, tables, and plants. Veritably it is the home of a flower lover, of one who loves not only to see plants, but loves to have them with her.

And the stable? I had all but forgotten it, albeit it is one of the sights of the place. The courtyard is palatial, a high iron railing admitting to an open court marked off with bay trees. In the center is a bay-windowed office for transacting business.

This stable is devoted wholly to carriage horses and carriages. It is the house stable. Here the blooded stock is kept, and the Head Coachman—I am sure this title is right, even if the Head Chickener be questionable—is a mighty power in his domain. A wing runs out from the central building, thus dividing the stable into two parts. Of course it is a truism to say that few people are so well housed as the Mackay horses; but unless one has visited this perfectly kept stable, this much cleaned stable, this apple ordered stable, one does not know how really true it is. Two great halls contain the horses, ten in each, with box-stalls so large that an ordinary room has no more floor space. The names of the gentry inhabiting these apartments are placed over each stall. Other rooms are given to carriages, to harness, to washing harness, to storing blankets, to preparing feed—every possible duty of the high-grade stable is here carried on in a separate place, and with the utmost nicety and cleanliness.

Upstairs are the homes of the Head Coachman and the men. That great functionary escorted me in person to his domicile, where four thrifty children are growing up under fine conditions of space and cleanliness. Ample room here for more, may be, but ample room surely for those now here. A convenient call button enables the Head Coachman to wake his men by the simple process of turning over in bed and pushing a button beside it; other buttons enable him to put out the lights if his boys stay up a bit late.

Down two corridors are the rooms for the men; each simply furnished with a bed, table, chair, and bureau; each kept in the finest order; each a quiet, cool, pleasant sleeping place. A common room serves for their meals, the Head Coachman, as befits a high officer of state, having his separate service.

LIVING FENCES.*

BY CHARLES F. HOLDER.

THE story is told in Southern California of a flower lover from one of the New England States who, in moving to the San Gabriel Valley, California, which nestles under the shadows of the high Sierra Madre, brought a treasured calla lily in a pot, one that had been the joy of home through the long eastern winters, and its bloom at once the envy and delight of the village. As the traveler entered the rocky pass from the desert and rolled down into the garden spots of Southern California, the oasis which lies between the desert and the deep sea, she passed a field as white as snow which stretched away until seemingly lost in the distance. To her amazement, she learned that the white, velvetlike carpet was made up of callas; not diminutive plants like her own, but lusty giants three and four feet in height. The very land appeared strewn with callas. They formed hedges and fences, and fairly put to shame the potted calla that had been so carefully brought from the New England home.

The incident illustrates the exuberance of the flora of Southern California where one sees the highest development of many plants of the East highly treasured as hothouse plants. What possibly makes the most vivid impression upon the stranger is the uses to which flowers and plants of various kinds are put. Here we see long lines of the century plant used as a fence (Fig. 5), its spiked leaves presenting a bold and valiant front to man or beast. There is but one drawback to it; instead of waiting the century of song and story, it blooms in from twelve to seventeen years, then, throwing up a stalk of colossal size, which grows so rapidly that one could well doubt the evidence of the daily measurement, unfolds and blossoms out, a thing of beauty, the supreme effort of the plant, as it now dies down.

One of the common hedge plants, when a mere conventional line is desired, is the calla (Fig. 4), its tall leaves, the huge stalked flower making it an excellent fence, and all that is esthetic and beautiful. Masses of heliotrope are used to cover walls, climbing ten, fifteen, even twenty feet in semi-shaded locations, and often grown against a wire frame forming the sides and roof of a dainty altogether charming summer house.

Perhaps one of the commonest hedges is the Cherokee rose (Fig. 1), with its single petals interspersed with the blossoms of rich, red, ragged robin. The former is a most exuberant climber, and forms a dense and beautiful fence or hedge. These floral fences, the wild rose, the old Castilian rose brought over by the padres in the days of the missions, are the byways of countless birds, the house finch and many more nesting in them, while humming birds flit about the blossoms chirping and squealing, while mocking birds perch upon the flowering hedge, sounding their melodious notes day and night.

The idea of a living fence that would at once be a protection and an attraction must have originated long ago. Perchance it was the outcome of some inherent esthetic sentiment, or it may have been a labor-saving plan, or have contained an economic phase suggested to-day in the use of the many rich blooming eucalyptus. From the summit of the Sierra Madre the San Gabriel Valley, especially the vicinity of Pasadena, resembles a checker board, being laid out in squares, so sharply divided that they command immediate attention. The green divisions are eucalyptus fences (Fig. 6) which divide ranches, vineyards, or lemon or orange groves; plumelike trees, which rise from fifty to one hundred or more feet, among the graceful trees of California, a debt to Australia. These trees, some species of which are among the giants of the world, attaining a height of three or four hundred feet in their native wilds, form charming vistas on the great ranches of the San Gabriel. Sometimes they grow in a single line slightly inclined to the east by the steady trade wind, rising boldly high into the air; some covered with masses of creamy blossoms, others displaying dazzling scarlet tufts, the blossoms alone commending the many species to the tree lover. Again we find them in double lines forming a street or avenue reaching away as far as the eye can see, the roadway marked with strange shadows, the naked trunks picturesque, as they have a strange habit of shedding their bark, the tree providing at once wood and kindling to the rancher. The economic side of these trees is not uninteresting. We see them forming one side of a road, the other bearing the graceful pepper or the fan palm—so vigorous in its growth—or these trees are alternated with the magnolia and palm.

The tree lover who visits these lanes and byways in Southern California perchance passes by some day when a blight appears to have struck all nature. A gang of Mexican peons has taken possession, and the giants are drooping, falling by the wayside, while the hum of an adjustable wood saw tells the story of de-

struction. It is destruction, but not so serious as it appears, as the superintendent points out old stumps from which noble trees are growing, and the stranger learns that the graceful eucalyptus is a very rapid grower; that it is cut down with regularity on certain ranches, and almost immediately sends up other shoots, and with remarkable celerity becomes a large tree again. These tall trees in endless lines, are the byways for certain birds. The golden oriole nests among the drooping leaves, and I have found its pendulous nest fairly smothered with the gorgeous scarlet blossoms. The humming birds of at least two varieties effect this living fence, adapting their nests to the tint and shape of the lancelle leaves, the resemblance rendering them safe from all but trained searchers, and when the great trees are in bloom, gorged with sweets, the hummers, dazzling in their gleams of ruby bronze, fairly swarm about them—gems scintillating in the blue haze of this California setting.

One of the charming hedges or windbrakes I recall in a ride across country was formed of the camphor tree, which, especially when young, is a delight to the eye in its varied leaf tints of amber, green and red, and when full grown and aged forming a beautiful tree, symmetrical and suggestive of vigorous life.

In a byway leading from a little vale into the cañon of Verdugo, I found a fence or windbrake of the graceful pinelike casuarina. I stopped and rested beneath the drooping boughs, as the tree has a fancy for sending its branches boldly up, then weighting them so heavily with musical pointed needles that they fall downward, sweeping the ground and, in obedience to the wind, making cabalistic signs and figures on the sand. No sweeter music ever came down the wind than the soft murmur that rippled through this living fence; now rising a myriad of tinkling sounds, blending in greater volume to form in ever-rising cadence, a very requiem of nature. Of an entirely different quality was the fence of pine farther up the cañon, protecting the north side of an orange grove leading to the Sierra Madre from the occasional north wind. Here it was louder, more strident, yet none the less musical. Beneath these singing trees in my own garden I have bushes of abutilon covered with the red, yellow, and white bell-shaped blossoms, and as the trade wind sweeps through and the notes from countless eolians rise, I can almost fancy that the bees and humming birds are clanging these bells—an angelus of nature.

In the late spring an apparition appears among the chaparral of the slopes of the Sierras, a column of pure white made up of bells of great beauty (Fig. 2) which, if they do not tinkle, send forth an incense that comes down the wind into the valleys to tell that the "candle of the Lord" is illumining the mountain-side. This radiant object which splashes the green of the Sierras is the bloom of the yucca, an insignificant spiked plant to send up so gorgeous a column to twenty feet into the air. These yuccas have been planted as hedges in California, and when in bloom the long double lines of shafts of white present a remarkable appearance.

The idea of a living fence commended itself to the early Spanish occupants of California. The old mission of San Gabriel and its many acres was surrounded by a hedge or fence of tuna or cactus, nearly one hundred years ago, and remnants of it still stand to show how effective against man and beast it was. In Mexico the organ cactus (Fig. 3) is sometimes employed as an effective and picturesque fence, the tall candle cactus also being used.

PASADENA, CAL.

CHINESE TABLE LINEN.

THE Chinese pieces come in tablecloths, two sizes of centerpieces, and finger and plate doilies, and are extremely moderate in price, says a contemporary, considering the quality of the materials and the work upon them. For the most part the figures in the embroidery are not conventional flowers, such as have always been and probably always will be popular, but lively and elaborately-formed fish, with spirals about them, skimming through rippling waters, and splendid dragons, twining long tails in high art fashion among the roses and lilies of earth.

The stork, too, is popular with the Chinese workers, and, like the butterflies, it shows individual inclinations in the matter of flight. The birds are lovely, whether in white upon clear Delft blue, in blue upon white, or in all white. Other patterns favored by the Chinese are chrysanthemums, cherry blossoms, tiger lilies and the lotus flowers. The last is not a common pattern with them, and appears chiefly when they wish to use the rim of a half-closed flower to form an irregular border to a circular piece of linen.

Although pure white is the leading thing in table linen, and other colors are not in vogue at all, there is one exception—ceramic, or Wedgwood blue. This blue appears in two shades in the new table linen, and the Chinese use three shades in their embroidery, shading the objects worked in it.



TREE PLANTING.

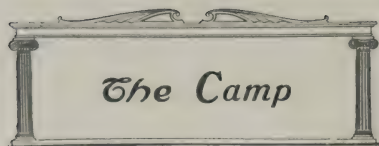
IN an address before the Association of Municipal and County Engineers of England, Mr. Francis Smythe said the planting of trees in streets and public places was now receiving the attention of local authorities it deserved, and had during late years made such progress that the up-to-date municipal engineer must necessarily add arboriculture to the many subjects of which he must make himself proficient. Trees had a greater effect upon the health of human beings than most people had any idea. Although the inhabitants of a well-governed town lived under much superior sanitary conditions to those generally in rural districts, the normal death rate of towns, as a rule, rises in proportion to the density of its population, and generally exceeds that of the country districts, carbonic acid gas being one of the elements which contribute to the cause. While in the air of rural districts there was but a trace, in some towns it existed to the extent of as much as .050 per cent. This gas, even in the smallest quantity, was inimical to human life, and every means adopted with a view to its elimination from the atmosphere must have the effect of increasing the health of a population. Carbon combined with water formed the greatest proportion of the constituents of plant life, and as carbon could only be assimilated by plants in a soluble form carbonic acid was absorbed by them in considerable quantities, not only by means of their roots, but to a much greater extent by the pores of their leaves. In the process of assimilation, the carbonic acid gas was decomposed by the action of light, the carbon was retained, and oxygen, which was conducive to health, was thrown off. Although at night a reverse action takes place, the leaves excluding the carbonic acid gas absorbed by the roots, the amount of gas thrown off at night had but a very small ratio to the amount of oxygen excluded during daytime. Another constituent absorbed by trees was ammonia, which was more prevalent in populated places, especially manufacturing districts, than in the country, due to the decay of a greater amount of organic substances in a confined area. When the enormous area of leaf surface of a single full-grown tree was considered, it could be better understood what effect the process described had upon the atmosphere. Before deciding what trees to plant, a close inspection should be made of all existing trees in the neighborhood, and those in a flourishing state suited for road work be noted, and planted. The following trees were suggested as being suitable for road planting, with the soils most congenial to their growth. They are given in the order of preference, which was, however, subject to the circumstances of locality:

Plane occidentalis	London	Heavy soil
" acerifolia	"	"
Maple	Norway	Any soil
Sycamore	"	"
Oak	Turkey	"
"	English	Heavy soil
Poplar	Canadian	Any soil
"	Ontario	"
"	Balsam	Heavy soil
"	Black Italian	Any soil
"	Lombardy	"
Elm	Camperdown	Heavy soil
"	Scotch or Wych	"
Lime	European	Light soil
"	Crimean	"
"	Red twigged	"
Birch	Common	Any soil
"	Silver	"
Ash	Common	"
Willow	"	Moist soil
"	Huntingdon	"
"	White	"

There were also several handsome flowering or berried trees most suitable, so far as growth was concerned, for planting on roads. Apart from the nature of subsoil, the character of the locality had to be taken into account. There were also some trees that would not thrive on a chalky subsoil.

Trees for manufacturing or smoky districts: Planes, Norway maple, sycamore, poplars, ash. Trees for cold, exposed positions: All the trees mentioned except planes and limes. Trees for seashores: Sycamore, Norway maple, Turkey oak, Camperdown elm, gray poplar, white willow, common ash. Trees for chalk soils: Norway maple, sycamore, poplars, birch, ash. One of the great mistakes made in planting trees in roads was that they were invariably planted too close. They should never be less than twenty-five feet for birch, some kinds of willows, and small growing trees, and at least thirty-five feet for the larger kinds, otherwise, when full-grown, the branches interlaced with one another, and the symmetry of the trees was destroyed.

*The illustrations referred to in the text will be found on page 52.



AN ADIRONDACK CAMP SEWAGE DISPOSAL PLANT.

THE CAMP OF WILLIAM ROCKEFELLER, ESQ.

A DESCRIPTION of the sewage disposal plant built for the camp of William Rockefeller, Esq., at Bay Pond, N. Y., is given by the Engineering Review.

The camp comprises a large, substantial, one-story frame dwelling, a house for the superintendent of the property and his family, who remain throughout the year, and for guides employed during the season, a dining and kitchen building, barn, railroad station, and other smaller service buildings. The water supply is brought from a reservoir built on the side of the hills some distance away.

As there is a well near the guides' house, from which drinking water is drawn, it was decided to build all of the sewers near the camp of extra heavy cast-iron pipe, with calked joints, to a point south of the railroad track, where the land slopes rapidly away from the camp. The sewers are provided with man-holes and lamp-holes at all changes in line or gradient. The lengths of pipe can thus be inspected throughout and readily cleaned. The upper ends of the lines are provided with flush-out connections, brought to the surface of the ground and sealed with screw plugs.

The sewers are flushed out about once a month in summer and twice during the whole winter. In connection with the manholes, attention is called to the manner of running the pipe through them; they are not always run straight, but at the angle best calculated to give the best results in regard to quickness of flow and diminution of friction, and for convenience in using clearing rods in case stoppages should occur in the sewers.

The system of disposal decided on was a septic tank with overflow to two siphon chambers, from which the sewage is automatically discharged into natural sub-surface irrigation beds of deep coarse sand, situated about a quarter of a mile from the dwelling house. The disposal field is about 450 feet distant from the siphon tanks, across a ravine. The discharge pipes from the siphons are extra heavy cast iron carried on a trestle across the ravine. The pipes on the trestle are enclosed in a wooden box packed frost proof with sawdust and the box is shingled to shed water and present an attractive appearance.

The disposal beds are laid out in duplicate and the delivery to each bed is valved so that the sewage can be directed to either half of the bed. In addition to this there is a valve chamber close to the siphon tanks arranged so that both siphon tanks can be discharged into either discharge pipe leading to the beds. The manipulation of the valves in the valve chamber and the valves at the disposal beds allows the sewage to be concentrated on either half of either bed or to be distributed over the entire surface of either or both beds.

In the summer months each siphon tank flushes once in twelve hours, which would mean one flushed every six hours. In winter they flush about one-third as much. The siphons operate alternately, when one siphons, the other is about half full. The sewage system has been in operation for two years, and up to the present there has been no stoppage in any of the pipes, and the system has been working perfectly. The settling chamber is cleaned once a year.

An examination of the disposal beds was made a year after the plant was installed, and they were found to be disposing of the sewage without any appreciable filtration to the underground water. Enough effluent could not be collected to afford a sample for analysis, as the deep sand beds were practically absorbing it all.

CAMP COOKING OUTFIT.

AN entire cooking outfit for the camp includes twenty-one pieces and occupies, when folded, less than two cubic feet of space. Room is left in the interior of the boiler for thirty-three pieces of tableware, comprising six cups and six plates. A wrought iron fire jack rests over the open fire and serves as a standard for the cooking utensils. The slat top provides for broiling. The whole cost is \$6.50.

A PORTABLE house for the camping party is 12 by 12 feet. It has two windows, a door and a sloping roof. The timbers of the house are all numbered and joined so easily that one man can put it up alone.

THE summer camp should be simply treated with furnishings and furniture adapted to the rather heavy usage that might be expected in such places. There should be ample furniture but no overcrowding.

A RESIDENCE AT SPRINGFIELD, MASS.

THE engravings on page 53 illustrate a residence erected for F. P. Doolittle, Esq., at Springfield, Mass. The underpinning is constructed of red brick laid in red mortar. The superstructure is of wood, and the exterior framework is covered with shingles, which are stained a silvery gray color; the trimmings are painted white. The roof is covered with shingles and stained a moss green. Dimensions: Front, 38 ft.; side, 32 ft. 10 in., excluding piazza and terrace. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 8 ft. 6 in.; second, 8 ft.; third, 7 ft. 6 in.

The hall and vestibule are trimmed with quartered oak; the latter has a paneled wainscoting and a tiled floor. The hall also has a paneled wainscoting and a beamed ceiling, and it also contains an ornamental staircase with columns, spindle screen, etc. The reception-room is trimmed with whitewood, and is treated with China white paint; the floor is laid with rift sawed hard pine. The living-room is trimmed with birch, and has an oak floor, a bay window with seat, and an open fireplace built of brick with the facings and a hearth of the same, and a mantel of good design. The dining-room is trimmed with quartered oak and has a paneled wainscoting, a beamed ceiling, and a china closet built in with leaded glass doors above the center shelf. The butler's pantry is trimmed with hard pine, and is furnished with sink, drawers, cupboards, and shelves. The kitchen is also trimmed with hard pine, and has a hard pine floor, and is provided with all the best modern conveniences.

The second floor is trimmed with ash, and contains four bedrooms, provided with ample closets, linen closet, and a bathroom, the latter is wainscoted, and the walls and ceilings throughout are covered with white enamel paint. This bathroom is provided with porcelain fixtures and exposed nickelplated plumbing.

The third floor contains two bedrooms and a trunk room. The cellar contains a laundry, furnace, fuel room, and a cold storage room. Mr. G. Wood Taylor, architect, Springfield, Mass.

A RESIDENCE AT FLATBUSH, BROOKLYN, N. Y.

THE residence at Flatbush, Brooklyn, N. Y., illustrated on page 51, was built for G. E. Austin, Esq. The underpinning is constructed of red brick laid in red mortar. The superstructure is of wood, and the exterior framework is covered with sheathing and good building paper. The first story is clapboarded and painted a Colonial yellow, while the trimmings are painted white. The second and third stories are covered with shingles and stained a soft brown color. The roof is also shingled and stained a dull shade of moss green. Dimensions: Front, 37 ft.; side, 39 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

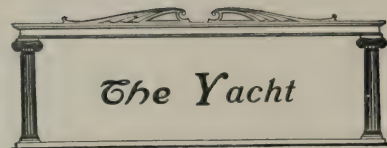
The most attractive feature of this house is the hall, which has a semi-domed ceiling supported on eight fluted Ionic columns. This hall has a modern cornice and a paneled wainscoting, the whole of which is treated with old ivory white. The partitions between this hall, and the den, and drawing-room have windows glazed with leaded glass in an artistic manner. The staircase hall is separated from the entrance hall by a square archway, and contains an ornamental staircase with turned newels and balusters of old ivory white and a rail of oak. The drawing-room is treated with old ivory white. It contains an attractive nook, containing an open fireplace, with white enameled tile facings and hearth, and a mantel handsomely carved and furnished with an over-mantel. This nook is paneled on walls and ceiling, and is also provided with paneled seats, with bookcases built in over the same and fitted with leaded glass doors.

The den is trimmed with cypress. The walls have cypress battens, as a wainscoting, to the height of six feet. The fireplace is fitted with red brick facings and hearth and a mantel-shelf. The dining-room is trimmed with oak. It has a beamed ceiling, paneled wainscoting, and a conservatory at one end of the room, which is an attractive feature. The butler's pantry is fitted with drawers, dressers, and bowl. The kitchen is provided with a large store pantry, sink and range complete.

The second story has four bedrooms, large closets, and a bathroom, the latter being furnished with porcelain fixtures and exposed plumbing. The third floor contains the servants' quarters and ample storage room. The cemented cellar is provided with a furnace, laundry, and coal bins. Cost \$5,000 complete. Mr. John J. Pettit, architect, 186 Remsen Street, Brooklyn, New York.

A CORRECTION.

ON page 21 of the July issue of the BUILDING MONTHLY an error was made in the crediting of the design of H. Ward Leonard's residence at Bronxville, N. Y., which should have been given to Messrs. Jardine, Kent & Jardine, of 1262 Broadway, New York, and W. A. Bates, of 100 Broadway, New York, instead of to W. W. Kent and W. A. Bates.



FLOATING AMERICAN PALACES.

AN article in the New York Sun summarizes a number of interesting facts relating to the palatial yachts of wealthy Americans. A modern yacht is fitted with the best balanced engines, so that the vibration is reduced to a minimum. A dynamo furnishes electric light and the electric current is also used to run fans that circulate air that has been drawn through ice-cooled pipes and so make the temperature more bearable even in the hottest climates. Should the yacht be making a voyage in winter or in some cool climate, the air that is circulated by the fans is drawn through pipes that have been heated. In the staterooms occupied by women there are electric curling-irons. Call bells are found everywhere, so that a servant is always at hand when wanted.

It used to be annoying to have the dynamos running while the yachts were at anchor in order to keep the electric lights and fans going, but this annoyance has been overcome by the use of the storage battery. While the yacht is under way the sound of the dynamo is drowned by the noise of the engines, and electricity is being stored up for use when the yacht comes to anchor. The electric launches which are carried on the davits of modern boats are all connected with the dynamo during the daytime and they are fully charged and ready for use as soon as the yacht reaches port.

Now yachts are fitted with ice-making machines. Some of the yachts, such as the *Axtec* and *Noma*, can make nine or ten tons of ice a day. A cold storage room is built on board and provisions that will last for months, if wanted, can be carried. Evaporating and distilling plants are also put on the up-to-date steam yacht, and the water question never causes worry.

Several of the larger steamers have automobile rooms and carry motor cars for the use of those on the yacht. Electric motors are the most popular for this use because they can be recharged while the yacht is running to some port and then they are all ready for use. The yacht has to go alongside some pier to allow the motor cars to run ashore.

There are yachts that have well equipped gymnasiums on board. Since photography has become popular, it has been necessary to have dark rooms on the yachts so that when pictures are taken, the plates can be developed and pictures printed. Another modern convenience is the wireless telegraphy.

The most popular arrangement of the accommodations of an up-to-date steamer of moderate size is to have the dining saloon at the forward end of the deck-house underneath the bridge. This room is usually finished in paneled mahogany. A large oval table, large enough to seat about twenty persons, is in the center of the room, and the chairs are of mahogany, upholstered in richly embossed leather.

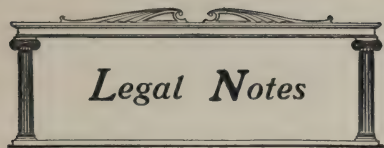
The windows of the dining saloon are of plate glass, and, if desired, can be lowered so that there is always plenty of cool air. Sideboards and buffets finish the furnishings of the saloon. A butler's pantry is usually between the saloon and the galley. Galleys are put on the deck instead of below, and thus all the smell of the chef's work does not get into the sleeping apartments. At the after end of this deckhouse there is a social hall, or a music room, and this is usually finished in some light wood, with draperies in keeping. The smoking-room is often on the upper deck, and there mahogany or dark oak is popular.

On the main deck are the sleeping or staterooms, the drawing-room and the ladies' saloon. Satinwood, butternut, maple, and white mahogany are the popular fittings for the staterooms. On a large yacht several rooms will be arranged en suite.

The drawing-room on a good sized yacht is the most artistic room on the ship, and on visiting it one could well imagine that he is in some handsome house on shore. In the music-room a piano and an organ are to be found, while all over the ship are cut flowers and rare plants.

Guests no longer sleep in a berth on such yachts as are now being built. The staterooms have finely carved bedsteads of mahogany, bird's-eye maple, or some other rare and expensive wood. The mattresses are often pneumatic. Dainty draperies of silk screen the dazzling glare of outside lights by day, and glass globes of delicate tints make the effect pleasing by night. Each sleeping-room has a bathroom adjoining, and hot or cold fresh or salt water is supplied to the bath for use on just turning the tap.

It costs a fortune to build and equip one of these floating palaces, and it takes what many would consider a fortune to run one.



Legal Notes

EXTRA WORK.

ONE who contracts to do brickwork on houses for a certain sum, and according to plans and specifications, is not precluded from recovering for extra work, though the agreement therefor is not in writing, as provided by the specifications; it not appearing that such provision of the specifications was incorporated in the contract. *Reichert vs. Brown*, 78 N. Y. Supp. 834.

"PRACTICABLE" AS SOON AS CONSTRUCTION.

WHERE a contract provided that the contractor should have part of the work done within thirty days from the date of the contract, and the balance as soon as "practicable" thereafter, the word "practicable" did not require the work to be done as quickly as it could be done with the best appliances and utmost facilities and with extraordinary diligence, but as soon as could be done by the exercise of due diligence and without unnecessary or unreasonable delay. *Williams et al. vs. Rittenhouse & Embree Co. et al.*, 64 N. E. Rep. (Ill.)

LACK OF CONSIDERATION.

A PROMISE made by contractors after a subcontractor had done work outside his contract, and not shown to be within their contract, to pay him therefor, is without consideration. *Majory vs. Schubert et al.*, 81 N. Y. Supp. 703.

MATERIAL FURNISHED BY ANOTHER.

A MECHANIC's lien claimant was not entitled to a lien for material furnished by another party, the owner not having been informed of such fact. *Sickman vs. Wollett*, 71 Pac. Rep. (Colo.) 1107.

OPINION OF ARCHITECT.

THE contract provided "that if the architect shall certify that the refusal, neglect or failure of the contractor to comply with the contract is sufficient ground for such action, the owner may terminate the employment of the contractor." The architect occupied a judicial position as to the parties, and was bound to act impartially upon his own judgment, and to express in some appropriate language, in writing, his opinion that there was sufficient ground to take the work out of the contractor's hands. A private letter written by the architect to the owner, and not communicated to the contractor, will not justify a rescission by the owner. *Wilson vs. Borden*, 54 At. Rep. (N. J.) 815.

ORDER ON OWNER—ACCEPTANCE.

UNDER a building contract providing that the owners should make certain payments as the building progressed, but, if there should be a lien when a payment became due, such payment should not be made until the lien was removed, where the owner accepted an order given by the contractor to a materialman, to be paid in installments, there then being no liens, such order and acceptance amounted to an assignment of the funds in the owner's hands, and was not affected by liens subsequently filed. *Garden City Co. vs. Schnugg*, 81 N. Y. Supp. 496.

"OWNER"—NOTICE OF LIEN.

THE word "owner," in Gen. Laws 1896, c. 206, section 5, in the provision relating to giving notice of a mechanic's lien to the owner of property to be affected, means the owner of the estate to be affected, whether it be the fee or a leasehold, or less interest. Where the purchaser of materials is a lessee, his term is the property to be affected by a mechanic's lien, and not the reversion of the landlord. *Poole vs. Fellows et al.*, 54 At. Rep. (R. I.) 772.

REFUSAL TO GIVE CERTIFICATE OF COMPLETION.

A REFUSAL of the owner's architect to give a certificate of completion of the building as required by the contract, based on the ground of plaintiff's failure to perform the work within the specified time, which refusal was shown to have been made in bad faith, did not bar a recovery by the builder. *Perry vs. Levenson et al.*, 81 N. Y. Supp. 586.

REPAIRS FOR TENANT.

ONE who made repairs under contract with the tenant, who, under his lease, was required to make all repairs, is not entitled to a lien on the premises, as for improvements with the consent of the owner, though the owner knew the work was being done. *Sunshine vs. Morgan et al.*, 81 N. Y. Supp. 278.

A SUMMER HOUSE AT NANTUCKET, MASS.

THE illustrations shown on pages 54 and 55 present the summer home of Mrs. David Nevins at Nantucket, Mass. The building is treated in the gambrel roof style with numerous bay and dormer windows and a spacious piazza. The underpinning is built of red brick, and the superstructure, of wood, is covered with matched sheathing on the exterior framework, good building paper, and thin shingles, which are left to weather finish, while the trimmings are painted white. This home has an outlook on top of the house which is characteristic of houses on Nantucket Sound, for all the old houses have this peculiar feature on account of its former glory as a whaling station. Dimensions: Front, 64 ft. 6 in.; side, 43 ft., exclusive of piazza and porch. Height of ceilings: Cellar, 7 ft.; first floor, 9 ft.; second, 8 ft.; third, 8 ft.

The interior, throughout, is trimmed with white pine, and is treated with old ivory white paint. The entrance is into a square hall which is provided with a paneled wainscoting, and a wooden cornice. The reception-room has a bay window, a low Colonial wainscot and an open fireplace furnished with a tiled hearth and facings and a mantel of Colonial style. The spacious dining-room, 23 ft. x 38 ft., has a paneled wainscoting, a heavy wooden cornice, and an open fireplace, with facings and a hearth of red brick, a mantel of Colonial style with a shelf supported on corbel brackets. The staircase rises out of this living-room from a broad landing provided with a paneled seat and a cluster of windows. This stairway has white painted balusters and newel, and a mahogany rail. The dining-room is finished in mahogany, and it has a paneled wainscoting, a wooden cornice, and an open fireplace built with a red brick hearth and facings, and a mantel. The butler's pantry and servants' stairway are conveniently situated, and the former is fitted replete with dumb waiter to the kitchen, which is located in basement. The coat-room is fitted up complete.

The second floor contains four bedrooms, two dressing-rooms, and a bathroom; the latter is wainscoted and furnished with porcelain fixtures and exposed nickelplated plumbing. The third floor contains one bedroom, three servant bedrooms, and a trunk-room. The sloping grade forms an unusual treatment for the basement, and it permits of the utilization of the rear for the uses of the kitchen, laundry, and servants' hall. The remainder of the basement contains the coal cellars, furnace room, cold storage, etc. Messrs. Ball & Nabney, architects, Boston, Mass.

A RESIDENCE AT SOUTH ORANGE, N. J.

THE residence illustrated on page 50 has been erected for John W. Combs, Esq., at South Orange, N. J. The lines of the building are square in form, but the faces are sufficiently broken by the numerous baywindows, porte-cochere and piazza to give the elevations an attractive appearance. The underpinning and the superstructure above is constructed of wash brick laid in red mortar. The band courses and all trimmings are painted white. The roof is covered with octagonal cut slate. The gable ends are shingled.

The house has a central hall, which is trimmed with white pine, and is treated with white enamel. It has a paneled wainscoting and a beamed ceiling. The staircase is an ornamental one, and is treated with white enamel paint, except the rail, which is of mahogany. It sweeps gracefully down to the newel post, composed of a cluster of spindle balusters. The main landing of the staircase is provided with a cluster of delicate stained glass windows. The drawing-room is also treated with white enamel, and it has an open fireplace built of Roman brick with the facings and a hearth of the same, and a mantel of Colonial style. The sitting-room is finished in a dull green. The dining-room is trimmed with oak, and it has a paneled wainscoting, a beamed ceiling, a plate rack, and an open fireplace furnished with Roman brick facings and hearth and a mantel of oak. The butler's pantry is trimmed with North Carolina pine, and it is provided with a butler's sink, drawers, dressers, and cupboards. The kitchen is trimmed with North Carolina pine, and it has a range, sink, store pantry, and pot closet.

The second floor contains four bedrooms provided with large, well fitted up closets, one dressing-room, linen closet, and a bathroom. These bedrooms are painted white. The bathroom has a paved floor of Dutch tile, and is furnished with porcelain fixtures and exposed nickelplated plumbing. The third floor contains a trunk room and the servants' quarters. The cellar, cemented, contains a furnace, laundry, fuel room, and cold storage. Mr. James E. Baker, architect, Orange, N. J.

FEWTER, old and new, is in great favor. It never looks cheap or common and fits in with modern systems of primitive styles of furnishings.



The Flat

THE "VEST POCKET" FLAT.

QUITE the newest thing in compressible houses hails from Los Angeles, Cal. The description given by a New York paper unfolds a remarkable story. In this house there are twelve "suites," each containing two rooms, which by means of electric push buttons and occult springs, hinges and trapdoors can be transformed into apartments having double parlors, two bedrooms, a library, dining-room, and kitchen. The owner of such an apartment, although actually possessing a floor area only 18 by 30 feet, can, by means of a few sleight-of-hand passes practically quadruple the size of his premises.

For example, a husband and wife on returning to such a flat from the theater find a front and back parlor. The husband lights the lamps with a push of an electric button, and touches a match to the gas logs beneath the mantel of each room. The wife asks for the writing desk and all John has to do is to press a button in the wall, and from below a bookcase containing shelves for a hundred books there unfolds a writing desk, with paper, ink, envelopes, and all else necessary for a letter to a mother-in-law. Below the desk opens a large drawer, which can be used for answered letters.

The wife finishes her letter and remembers that the stamps are in the pocket of a skirt hung in a closet. She touches another spring, and the bookcase, writing desk, and all swing back against the wall, disclosing in their place a small storeroom and clothes press.

John remarks that he would like a bite to eat, and the young wife, with a single swing of the arm, now turns the library into a kitchen. Taking hold of the knob of what appeared to be a rear door, she discloses to view a little cubbyhole, 5 by 6 feet, with sink, linen closet, china cupboards on the walls and a small refrigerator. It now appears there are two doors folding one on the other. On one door swings a gas stove, which is fastened to its inside surface. On the second door is attached a broad board, whose use will be apparent as soon as the supper is ready. The stove is able to swing with the door by means of a swivel jointed gas pipe.

From the pigeonholes and nooks and corners of the pantry the wife brings to light food products of modern cunning and ingenuity, which contain in a few withered flakes "as much nourishment as a pound of meat," and which on affiliating with water swell as rapidly as the cloud that was at first no bigger than a man's hand. Finally she mixes a few teaspoonfuls of some other powerful expansive with a pitcher of hot water and pours into her husband's cup a brown, creamy and delicious looking beverage.

A fire is still burning in the grate beneath the mantel of the dining-room, but John pushes back a spring and, presto! the gas logs are extinguished. The mantel tips forward into the room, and out comes a bed, made ready for a guest, with the best shams on the pillows, and a bedspread which took all of John's salary for one week. A series of airshafts have kept the bed fresh, and a clamp prevents the bed from shutting up with its occupant.

The building which contains such "vest pocket" flats as these is plastered in front after the fashion of a Spanish mission, and its architecture is of a type to harmonize with a balmy climate. There are large bay windows, iron railed balconies, and a tile roof. The building cost \$12,500, and rents for \$50 an apartment, which nets the owner, according to his own statement, \$7,200 a year, or nearly 60 per cent. Such returns, it is safe to say, seem the dream of a Munchausen to a Harlem landlord, who is content with 8, or even 6, per cent. on his investment.

THE ICELESS REFRIGERATOR.

THE iceless refrigerator has been achieved, points out a contemporary, but has not as yet been made practicable for general use. In one of the newest and most palatial apartment houses in New York the large refrigerator in the kitchen of each apartment contains two compartments. One is for ice, but the other is a vat which contains a freezing mixture. A set of molds comes with the refrigerator to fit into the tank. When any still freezing ice cream is to be made, it is simply put into a mold and placed in the tank until serving time. Hot puddings, etc., are cooled in a few minutes there.

FLATS, which have long enjoyed a certain popularity in London, are coming more and more into favor, many of the nobility now using them as their London homes.

Sanitation

HYDROCYANIC-ACID GAS IN THE HOUSE.

BY L. O. HOWARD.

RECENT experience indicates that in order to destroy household insects one fluid ounce of commercial sulphuric acid, diluted with two fluid ounces of water, to increase the bulk of the liquid and insure complete chemical action, and one ounce of high-grade (98 per cent.) cyanide of potassium must be used for every 100 cubic feet of space.

Before performing the operation the house must be vacated, and it is well to do this just before nightfall. It is not necessary to remove any of the furniture or household belongings unless of polished nickel or brass, which may tarnish a little. Liquid or moist foods, as milk or other larder supplies that are not dry and might absorb gas, should be removed from the house. All fires should be put out, for, while the gas will not burn under ordinary conditions, it is well to take no risks.

On the floor of each room should be placed a large porcelain wash basin, and into each wash basin should be poured the proportionate amount of water and sulphuric acid. It may be well to place under each wash basin a thick layer of newspapers, in order to avoid damage to carpet or rugs by the possible spattering of the acid acting upon the cyanide. All windows must be closed, and if they are not tight they should be calked with thin paper or cotton batting. Then the operator, beginning at the top of the house, drops the proportionate amount of cyanide of potassium, previously weighed out into thin paper sacks, into each washbowl, running rapidly from room to room and instantly closing the door behind him, descending ultimately to the ground floor or even to the cellar, running finally into the open air through the open door, which is instantly closed.

Hydrocyanic-acid gas is lighter than air and consequently rises. Therefore, the operation must be begun at the top of the house. The next morning the operator returns to the house, opens the last door, allows a certain amount of airing; then enters hurriedly and opens the windows of the first room or floor; then, after the thorough airing of this one, another in turn, thus gradually airing the whole house. The fumes quickly overcome and are fatal to human beings; hence the necessity for the utmost care and greatest speed in the initial operation and in the subsequent airing and the undesirability of performing the experiment alone. The house should not be reinhabited until all trace of the odor of the gas has disappeared. This odor resembles that of peach kernels.

The experience of Mr. Mariatt and Mr. Kirkland indicates that the operation can be safely performed in the manner indicated, but there is another way which was originally invented in greenhouse work. An ingenious person, by means of strings and improvised pulleys, can arrange it so that standing outside and loosening the string the cyanide suspended over the receptacles may be dropped simultaneously into the sulphuric acid. It will be, perhaps, not necessary to go into details, since any ingenious person can devise such an arrangement. It is, however, not so certain as dropping the cyanide by hand, since a caught string here or there might lessen the completeness of the fumigation.

In handling the acid great care should be used in pouring it from the bottle and in putting it into the vessels to avoid spattering on the hands or face, since it will burn rapidly through the skin, and should it spatter into the eyes would cause serious inflammation, or if on the clothing it would burn a hole in the garment. Should a drop fly to the hands or face, bathe the part promptly and freely in water, and the same also for garments or the carpet. It is further desirable to have at hand a bottle of ammonia water to neutralize the acid should it spatter on the clothing. The cyanide should be broken up into lumps not exceeding twice the size of a walnut, the powdered and smaller fragments serving equally well. The bags should be of very thin paper. If they are of thick, heavy paper, the action of the acid is delayed, and sometimes prevented completely. If there is any danger of this make two or three slits in the bottom of the bags to facilitate the entrance of the acid. Deep vessels are more satisfactory for the experiment than the wash basins chiefly used, but the latter were available and required no additional expense and served the purpose. Deeper vessels would give greater depth to the water and acid and accelerate the chemical action. Whenever the room is of such size that more than two pounds of cyanide must be employed for it, it is perhaps better to make two charges of half size for such a room.—From Circular 46, U. S. Department of Agriculture.

A RESIDENCE AT MONTCLAIR, N. J.

THE illustrations shown on page 57 are of the residence of A. C. Elliott, Esq., at Montclair, N. J. A picturesque effect is obtained by the use of local field stone for the underpinning, part of the first story walls, veranda walls and piers, which, combined with the graceful lines of the shingle work, gives to the house a very pleasing appearance. This shingle work is stained a dark brown, dull in tone, and the trim is painted a bottle green. The roof is shingled. Dimensions: Front, 43 ft. 6 in.; side, 40 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

Upon entering the house, through a vestibule, one will notice that the hall is trimmed with cypress, stained a dark brown, with high wainscoting and beamed ceiling. Above the wainscoting the walls are covered with terra cotta cartridge paper. At the end of the hall are the stairway and the fireplace, with a mantel treated with columns. The reception-room is Colonial in its treatment, with the woodwork painted white enamel, and the walls covered with a Colonial-figured yellow paper. The living-room, with its spacious fireplace, is trimmed with cypress and is stained a dark brown, and the walls are covered with a tapestry paper, and, with its Southern exposure, makes a very attractive room. The dining-room has a high base and plate rack, and it is also trimmed in cypress, stained a dark green, almost black, with the space between the base and plate rack covered with green burlap. The floors throughout are double, and the finish floor in the principal rooms are of quartered oak, except the reception-room, which is of maple. The passageway under the main stairs allow direct and easy access from the kitchen, back stairs, cellar, and main hall. The kitchen and its dependencies are fitted with the best modern conveniences.

There are four large bedrooms and a bath, with the usual large amount of closet space, on the second floor, to meet the requirements of the owner. The hall and bedroom over the living-room are trimmed with cypress and are stained slightly, while the balance is painted white. The floors are of North Carolina pine. The bathroom is furnished with porcelain fixtures and exposed nickel-plated plumbing.

There are four bedrooms, with closets and a camphor closet on the third floor. The cellar contains the heating apparatus and ample space for cold storage, fuel bins, etc. Mr. A. F. Morris, architect, 150 Nassau Street, New York City.

SUMMER HOME OF HERBERT LUCAS, ESQ., SOUND BEACH, CONN.

THE summer home which is illustrated on pages 58 and 59, has been built for Herbert Lucas, Esq., at Sound Beach, Conn. The building is designed in a quaint manner. The underpinning and chimneys are built of rough stone. The superstructure is constructed of wood, and the exterior framework is covered with matched sheathing, and then with old-fashioned cypress shingles, three feet long and laid ten inches to the weather; the whole being left to weather finish. The roofs are covered with similar shingles. The cornice, columns, and exterior trim is of white pine and painted white.

Dimensions: Front, 43 ft.; side, 37 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The entrance is into a large living-room 18 ft. x 32 ft. 6 in., with fluted Ionic columns forming a square, and dividing it into three parts. The walls are covered with crimson burlap, and the woodwork is painted old ivory white. The fireplace has a hearth and facings of Gruebeyle tiles and a mantel with shelf supported on corbel brackets. The staircase, which is recessed in an alcove, has oak treads, white risers and balusters, and a mahogany rail. The dining-room has a wall covered with green burlap, and white painted trim. The butler's pantry and kitchen are treated naturally, and each are fitted up with all the best modern fixtures complete.

The second story trim is treated with old ivory white paint, and the walls are tinted. There are four bedrooms, one dressing-room, and a bathroom, the latter with its walls and floor covered with tiles, and furnished with porcelain fixtures and exposed nickel-plated plumbing. The dressing-room has an open fireplace with the facings and a hearth of Gruebeyle tiles, and a mantel. The hardware throughout is a reproduction of the old Colonial thumb latches. There are one bedroom and servant quarters, besides ample storage space on the third floor. A cellar, cemented, contains a laundry, furnace, fuel room, and cold storage. Mr. Herbert Lucas, architect, 1133 Broadway, New York.

GREEN cedar furniture made in the so-called mission style and design, but more rustic in character, has been much in use this season and has been produced in many beautiful forms. Much of it is permanently good, and will long remain in favor.

New Books

A HANDBOOK TO THE GARDEN.

THE FLOWER GARDEN. A Handbook of Practical Garden Lore. By Ida D. Bennet. Illustrated. New York: McGuire, Phillips & Co. 1903.

This is a thoroughly admirable book, one of those books that every garden lover, and especially every garden beginner, must have wished for many a time. It is a clear and concise summary of every possible sort of information that might be desired by any one interested in gardens, prepared by one who is manifestly entirely familiar with the garden art, and who herself has been through the experiences whose results are here presented in very excellent form.

The opening chapter, on the location and arrangement of the garden, is perhaps the least valuable portion of the book, for every garden maker will speedily learn how to plant a garden and how to lay it out. In a general text-book, however, such suggestions have a natural place and the space thus used is not altogether lost. Succeeding chapters treat of soils and fertilizers, of the hotbed, the cold-frame, and the sand-box; a useful chapter gives some helpful advice on the purchasing of seeds, and the balance of the book is concerned with the raising and growing of plants. The portions devoted to "common" plants, which every one wishes to raise who has a true love for flowers, but of which information is difficult to obtain, are especially welcome and helpful.

The volume is abundantly illustrated, although some of the illustrations are entirely unnecessary and without special value. It would add somewhat to the convenience of the book if succeeding editions were printed on lighter paper. It is a volume brimful of practical information and a most useful addition to the garden literature of the day.

THE PRESERVATION OF THE HOME.

THE PERIL AND PRESERVATION OF THE HOME. Being the William L. Bull Lectures for the Year 1903. By Jacob A. Riis. Philadelphia: George W. Jacobs & Co. 1903.

The battles of Mr. Riis for the betterment of the tenement house are among the most important episodes in the history of contemporary economics. Unlike the college professor, safe in the seclusion of his study, Mr. Riis has been in the thick of the fight, and knows, as few men know their subjects, whereof he writes. The present book consists of four lectures given to divinity students in Philadelphia, and constitutes a strong plea for the betterment and preservation of home life and its influence on the nation as a whole.

The book makes no pretense to argue for the home in every aspect; it is the tenement home Mr. Riis is concerned with; but his eloquent pleas will move every one interested in this most important of human problems, broaden one's views of the perils of bad homes, widen one's conceptions of the redeeming force of good ones. Mr. Riis does not attack his topic from the architectural standpoint; but he shows how profoundly architecture and building influence character, make people better or worse. It is a strong book, inspired by the highest citizenship, and, like all of the author's writings, must be productive of great good.

THE CHILD HOUSEKEEPER.

THE CHILD HOUSEKEEPER. By Elizabeth Colson and Anna Gansevoort Chittenden. New York: A. S. Barnes & Co. 1903.

Mr. Riis, appropriately enough, supplies a brief introduction to this book. Much of his life has been concerned with the betterment of the home, and this interesting little book aims to help in the same noble work. Its purpose is to teach young girls to work neatly and intelligently at home, but not to train them to become servants. It consists of a series of lessons for children, beginning in the simplest way, and progressing by easy stages to comparatively advanced work. Songs with words and music are included, together with many practical suggestions for the teacher. The care of the home fills so important a place in its development and influence that every honest attempt to teach the value of household work has distinct merit. The present volume is based on much practical experience, and has value for even older housekeepers than those for whom it is directly intended.

Good books are never old and one can never have too many of them. Careful selection is always to be preferred to promiscuous buying.



Furniture

THE NEW ARTISANSHIP.

THE old artisanship was beautiful because it was sincere and self-forgetting, because it wrought to fashion its product into beautiful fitness for use. It had no morbid fear of compromising itself by excess of perfection, no feud with other methods, no double mind or sophisticated theory of the esthetic importance of conspicuous personality. There is not a little of this old-fashioned artisanship still left in the world, industries upon which machinery has made no inroad as yet, and where there is still no talk about things being "hand-made" or effort to "rub it in." Against these natural and healthy industries there is nothing to be said. Artisanship here still has its traditional charm. But wherever machinery has cut away the ground from under the feet of the artisan all attempts to reestablish its function in the interest of art have proved and must prove futile. The impulse to such artisanship comes from without rather than from within, and results in morbid self-consciousness and perverted ideals. The personality thus impressed upon the product is not an attraction; it is an impertinence. It is a mistake to assume that personality is an attraction *per se*. Some kinds are a nuisance.

The moral of all this is clear. Let the hand fashion what it can fashion best, and in particular what it can fashion unconsciously, without extraneous, perverting incentive. Have no feud with the machine; if it is the foe of art, then so much the worse for art, for no feud-born art can postpone the catastrophe. Acquiesce ungrudgingly in each new conquest of the mechanical. It may be a pity, but protest and sham and morbid self-consciousness are infinitely more pitiful. The machine may limit art, but only the artist can pervert it.

The hopelessness of this pathetic effort to rescue art from its fancied doom at the hands of mechanism naturally suggests the inquiry whether after all the doom of art is quite so imminent. Is there then no hope for art in the great field of mechanical production? That results up to date leave much to be desired is conceded. But is this inherent in machine production or merely a transition result? It will suffice our present purpose to clear away some of the obstacles to an answer.

First of all, we have mistakenly assumed that machine goods, if beautiful at all, must be beautiful in the same way as hand goods. And looking in vain for these familiar qualities, we are quick to pronounce an unfavorable judgment. In the nature of the case any such exact duplication is impossible, and the search for it has persistently perverted machine processes and products. And finding that they could not be perverted to advantage, we have declared them intractable and hopeless. In the same way iron ran amuck of stone when first employed for construction purposes. An English writer on art tells of the protest raised in London when a plain iron viaduct was built by a railway across Ludgate Hill. The railway was at last obliged to add expensive and useless cast iron brackets in imitation of stone to satisfy London taste. This he justly characterizes as ridiculous, but follows with the still more ridiculous assertion that the railway should have been compelled to erect a stone viaduct instead. Every consideration of economy and efficiency was in favor of the iron structure, but the artist, like the public, was used to stone forms, and saw beauty in them alone. He was merely a little less reasonable in refusing to make any compromise. We have long ago discovered that iron calls for other forms than stone, and are already beginning to see beauty in those forms when appropriately used. Nobody now wants a stone viaduct across Ludgate Hill, though all are heartily tired of the cast iron brackets. We are getting reconciled to iron, and to the forms which its nature imposes upon construction. Time was all we needed.

The same thing happens with every change. We look for an old thing and find a new thing. The old thing is everything to us, and the new thing nothing. It takes time to reconcile us. When we find the beauty in machine-made goods, it will be beauty of a new kind. So long as we are bent on the old kind, we shall miss both. We shall be tacking brackets onto a thing where they do no good and soon become unsightly.

We must further bear in mind that the center of gravity shifts as we pass from one system to another. Art thus shifts from one thing to another as systems change, for art is not a thing, only a spirit that is hidden away within things. Because the art of one age manifests itself in wall designs or figured fabrics, it does not follow that the art of another age can be judged by its wall paper or its figured chintz. The question is, are these things equally central in the life

and activity of the people? Obviously they are not in all cases. But while this will be freely conceded, no sufficient account is likely to be taken of it in a time like this. Attention is focused to-day upon utterly different things from those that engaged attention two hundred years ago. And it is here at these focal points that we must look for art. Only by repeated efforts and continued enlargement of our mental horizon can we shake ourselves loose from the trammels of the past in a time like this. We have a new heaven and a new earth, changed conditions of existence which we are but beginning to comprehend. We must look for equal changes in the forms and abodes of art.

The secret of all life activities and changes may be summed up in one word, adaptation. To perpetuate old conditions or renew old adaptations, this is never the mission of art. Our labor of love will not expend itself in medieval carving or hand-embroideries. Traditional forms, even the highest, will not express the enthusiasms born of new conditions. The new art will manifest itself in other and vaster forms.—Dr. H. H. Powers in the Boston Evening Transcript.

GAS AND ELECTRIC LIGHT FIXTURES.

ILLUSTRATIONS of gas and electric light fixtures are shown on page 56. One is photographed from the residence of A. B. Leach, Esq., South Orange, N. J.; the other is in the house of F. A. Long, Esq., Hackensack, N. J.

SUBURBANISM.

MILES and miles of villas exist in every metropolitan suburb with the name; and though the rents and sizes of them may vary, they are all built to one architectural formula, and all pinchbeck, ostentatious, and unlovely. No person of judgment, nobody possessed of a ray of philosophic spirit, can gaze upon them without concluding at once that the English do not know how to live. Take a street of such villas, big or little, and what do you find? You note, first, that nearly every house, be it occupied by clerk, few financier, or professional man, has got a highfalutin name of its own. The County Council or local authority has already bestowed upon it a number. But this is not enough for your suburbanist, who must needs appropriate for his house a name which will look swagger on his letter-paper. Hence, No. 2 Sandringham Road, Tooting, is not No. 2 Sandringham Road, Tooting, at all; but The Laurels, if you please. No. 4—not to be outdone—is Holmwood; No. 6 is Hazledean; No. 8, The Pines; No. 10, Sutherland House; and so forth. Then, again, if you walk down a street and keep your eye on the front windows of this thoroughfare of mansions, you will note that every one of those windows has cheap lace curtains to it, and that immediately behind the center of the window there is a little table, upon which loving hands have placed a green high-art vase, containing a plant of sorts. And right back in the dimness of the parlor there is a sideboard with a high mirrored back.

If you made the acquaintance with half a dozen of the occupiers of these houses, and were invited into the half-dozen front rooms, you would find in each, in addition to the sideboard before mentioned, a piano of questionable manufacture, a brass music-stool with a red velvet cushion, an overmantel with mirrored panels, a "saddle-bag suite," consisting of lady's and gent's and six ordinary chairs and a couch; a center-table with a velvet-pile cloth upon it, a bamboo book-case containing a Corelli and a Hall Caine or so, together with some sixpenny Dickenses picked up at drapers' bargain-sales. Nuttall's Dictionary, Mrs. Beeton's House Book, a Bible, a prayer book, some hymn-books, a work-basket of socks waiting to be darned, and a little pile of music, chiefly pirated. At night, when Spriggs comes home to The Laurels, he has an apology for late dinner, gets into his slippers, and retires with Mrs. Spriggs, and perhaps his elder daughter, into that parlor. There he reads a halfpenny newspaper till there is nothing left in it to read; then he talks to Mrs. Spriggs about that beast So-and-so, his employer; and Mrs. Spriggs tells him not to grumble so much, and asks the elder daughter why she doesn't play a chune to 'liven us up a bit. "Yes," says Spriggs, "What is the good of having a piano, and me buying you music every Saturday, if you never play?" Whereupon the elder daughter rattles through "Dolly Gray," "The Honeysuckle and the Bee," and "Everybody's Loved by Some One;" and Spriggs beats time with his foot till he grows weary, and thinks we had better have supper and get off to bed.—From Angus McNeill's "The Egregious English."

THE Liverpool Corporation having substituted electricity for horse-power on the tramways, the old cars have been sold. The best ones are now doing duty as summer-houses and studios in many a suburban garden, while others may be seen at various places between Liverpool and Ainsdale and Leasowes and Hoylake serving their purpose admirably as shelters, bathing-vents, hen-cotes, workmen's huts, etc.



New Building patents

The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

BUILDING BLOCK.	L. Guatt, Union City, Mich.	732,832
BRICK.	M. J. Murphy, Akron, Ohio.	733,069
TILES FOR CEILING.	W. Bremer, Emden, Germany.	733,134
BUILDING BLOCK AND WALL.	J. A. Ferguson, Denver, Col.	733,928
BUILDING BLOCK AND WALL CONSTRUCTION.	A. C. Waterman, Athens, Mich.	734,022

CARPENTRY.

FLOORING.	J. W. Heaton, Indianapolis, Ind.	732,741
WEATHER STRIP FOR WINDOWS, DOORS, AND OTHER STRUCTURES.	P. L. Headburg, Chicago, Ill.	732,862
ROOM.	P. Neumann, Jackson, Mich.	732,883
WEATHER STRIP.	J. N. Meljrit, Anderson, Ind.	733,071
WEATHER STRIP.	S. S. Stiles, Ripley, Okla.	733,295
WEATHER STRIP.	J. A. La Jeunesse, Alameda, Cal.	733,488
SASH BALANCE.	J. Foster, Altoona, Pa.	733,489
WINDOW SASH.	J. E. Scott, Louisville, Ky.	733,963

CONSTRUCTION.

METALLIC BOND FOR BRICK WORK.	H. E. Grant, Pittsburgh, Pa.	733,187
METALLIC BUILDING.	J. Speiman, Chicago, Ill.	733,435
CEILING AND FLOOR.	M. Murray, Troy, N. Y.	733,671
ILLUMINATING STRUCTURE.	L. O. Wadsworth, Williams Bay, Wis.	734,020
WALL.	W. N. Wright, New York, N. Y.	734,289
ARMORED CONCRETE FLOOR.	R. M. McDowall, Castleford, England.	734,593
SHUTTER.	J. J. Plucker, Philadelphia, Pa.	734,607
METALLIC FRAMING FOR PLASTIC PARTITIONS AND CEILING.	Walker and Fitting, Denver, Col.	734,781
DWELLING BLOCK.	Blacker, M. P. Baird, Chicago, Ill.	734,938

ELEVATORS.

ELEVATOR.	D. R. Macpherson, San Francisco, Cal.	733,238
ELEVATOR.	J. S. Muckle, Philadelphia, Pa.	733,864
ELEVATOR GUARD.	Flak and Spencer, Boston, Mass.	734,225
ELEVATOR MECHANISM.	E. Wright, Worcester, Mass.	734,249
SAFETY DEVICE FOR ELEVATORS.	W. H. Wilsey, Sioux City, Iowa.	734,384

FIREPROOFING AND FIRE EXTINGUISHING.

FIREPROOF WINDOW CASING AND SASH.	C. Schroeder, Erieport, Conn.	732,901
FIRE EXTINGUISHING APPARATUS.	J. W. Rapp, New York, N. Y.	733,421
AUTOMATIC FIRE EXTINGUISHER.	G. E. Hubbard, Chicago, Ill.	733,962
FIRE RESISTING DOOR.	G. E. Walter, New York, N. Y.	734,205
FIREPROOF CASING FOR PLASTER PARTITIONS.	Plucker, Philadelphia, Pa.	734,598
		734,602, 734,599, 734,600, 734,601, 734,602, 734,603, 734,604, 734,605, 734,606

HARDWARE.

STORM SASH HANGER.	O. F. Abrahamson, Minneapolis, Minn.	732,692
LOCK AND LATCH.	C. J. Caley, New Britain, Conn.	733,142
SPRING HINGE.	K. V. Clark, Buffalo, N. Y.	733,153
LOCK AND LATCH.	E. H. Dimock, Dorchester, Mass.	733,771
SASH FASTENER.	J. E. Gibbs, Bridgeport, Va.	733,640
SASH LIGHT SECURER.	G. K. L. Franke, New York, N. Y.	733,830
METAL WEATHER STRIP.	C. McMahon, Pittsburgh, Pa.	733,991
SPRING HINGE.	H. J. Valentine, Cleveland, Ohio.	734,446, 734,447
LOCK, Green and Carpenter, Orton, Mich.		734,541
SHUTTER FASTENER.	R. Kreibitzke, Tegel, Germany.	734,575
SASH LOCK, LIFT AND SASH SUPPORTER.	L. W. Hagel, Jacksonville, Ill.	734,855

HEATING AND VENTILATION.

COMBINED HEATING AND VENTILATING APPARATUS.	G. Reddow, Detroit, Mich.	732,698
WINDING VENTILATOR.	L. Zborowski, Stevens Point, Wis.	732,809
VENTILATOR.	E. J. Glackin, Chicago, Ill.	733,956
DEFLECTOR FOR HEATERS.	C. Kohnen, Cincinnati, Ohio.	734,071

MISCELLANEOUS.

APPARATUS FOR CLOSING ENTRANCES.	J. Wendler, Berlin, Germany.	732,982
CEMENT PLASTER.	A. De Monaco, Denver, Col.	734,678, 734,679

PLUMBING.

FAUCET.	J. Brizard, Domene, France.	732,824
WATER CLOSET.	W. E. O'Hara, Oldforge, Pa.	732,955
MECHANISM FOR TEMPORARILY LOCKING WATER CLOSET BOWLS OR WASHBASINS.	E. Woodruff, Chicago, Ill.	733,787
CUT-OFF FOR HOUSE PLUMBING.	C. G. Woods, St. Louis, Mo.	733,788
HOT AND COLD WATER FAUCET.	J. A. Greene, Proctorville, Ill.	733,958
FAUCET.	W. T. Nichols, Hempstead, N. Y.	734,355

TOOLS.

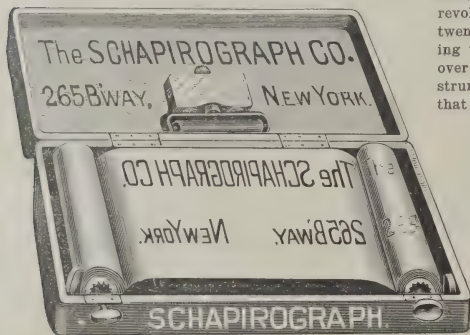
CARPENTER'S RULE.	F. E. Clark, Independence, Kan.	734,514
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Publishers' Department

THE SCHAPIROGRAPH.

THE Schapirograph Company, No. 265 Broadway, New York, is offering a duplicating device for making copies of pen or typewritten work. It is the latest multi-copying apparatus, reproducing black penwritten copies, also purple copies from typewritten work and pencil, without printing ink or stencil. For pen copying a special ink is used, and after the original is made on a ledger or linen paper, the writing side is placed on the surface of the prepared paper, which is wound on the rolls at either side of a box. Rubbing the back of the original copy transfers the writing to the prepared paper which makes the negative. The copy is then taken off, and the clear sheets, to which the copies are to be transferred, are placed, one at a time, on the negative. From penwritten copy one hundred and fifty duplicates can be produced; from typewriter or copying pencil copy, fifty copies. After one has taken all the copies desired from one original, the prepared paper is wound up on the roll, presenting a fresh surface. After the roll is used up, the paper is rewound on the original roll, the old negatives having faded out so that the roll can be used ten times in its entire length, thereby giving a printing surface of fifty-five yards, ready for continuous use. No washing is required. The schapirograph duplicator, since it cleanly



multi-copies, in all colors, anything written with a pen or a typewriter, twenty copies a minute, all equal to the original, is a necessity for every business where there is a frequent need of making rapidly a number of facsimile copies of forms, letters, manifests, invoices, plans, drawings, etc. The device is serviceable in all climates and at all seasons.

RECORDING INSTRUMENTS.

RECORDING instruments for pressure, temperature, and electricity are manufactured by the Bristol Company, Waterbury, Conn. Thousands of these practical and economical devices are in operation in all parts of the world, and, owing to their simplicity of construction and their accuracy and reliability in operation, they are now recognized as standard. The Company has lately issued two catalogues, one of recording pressure and vacuum gauges, and the other of recording volt, ampere, and watt meters. Both publications are clearly illustrated, thoroughly descriptive, and full of technical and statistical information. These catalogues contain complete lists of recorders recently added to the firm's already large line of this class of devices, and are designated Nos. 9 and 10; and a distinctive feature in each book is the large space given to specimen sections from Bristol's recording charts of pressure and vacuum gauges and volt, ampere, and watt meters, all full-scale size. Bristol's pressure gauges make a continuous record, day and night, of steam, water, gas, oil, or air pressure. They are adapted to all ranges of pressure; and users of steam in manufactories and mills, water and gas works, electric light and power stations, public buildings and institutions, hotels, etc., will find the instrument of great value, as it shows at a glance whether a boiler has received the attention upon which largely depends its safety and economy. Gauges for extremely low ranges of pressure make continuous records of gas pressure in street mains or of air for mine ventilation, and records of either pressure or vacuum in connection with draft, blast, or ventilating apparatus. The recording pressure gauge may be described as having its pen arm directly attached to the free end of a tube of flattened cross section which is

bent into a helical form of four complete convolutions. The tendency of pressure applied is to straighten or uncoil the tube, which causes the pen arm to move over the range of the chart without the necessity of any intervening multiplying devices. The amount each coil is bent by the application of pressure is quite small, and consequently the tube is not strained beyond its elastic limit. The chart makes one revolution every twenty-four hours, and is graduated with radial arcs and concentric circles. The divisions on the radial arcs correspond to difference in pressure, while those on the concentric circles correspond to the hours of the day. Gauges are also furnished with charts making one revolution in fifteen minutes, one hour, six hours, twelve hours, and one week. The standard size chart is eight inches in diameter; extra large size, twelve inches. The instrument may be placed in the office or engine room, at any desired distance from a boiler or a vessel of which the pressure is to be recorded. If required, gauges are furnished with electric alarm for high or low pressure. Bristol's standard recording volt meters in electric light, electric railway, and electric power stations make continuous records day and night in ink upon revolving charts, and pay for themselves by inducing careful regulation, which results in the highest efficiency and economy. Thousands are in daily operation for alternating and direct current of all commercial voltages. The volt meter is constructed on the electric balance principle without permanent magnets. One of the current coils is rigidly secured to the back of the instrument. The other is movable, and is supported by a pair of frictionless spring knife edges resting in V cuts at opposite ends of a shaft through the center. The pen arm is attached directly to the right hand spring and partakes of its motion, recording the changes of voltage on a uniformly moving chart driven by a clock to make one revolution in fifteen minutes, in one, six, twelve, or twenty-four hours, or once in seven days. For recording voltage of currents which are rapidly fluctuating over wide ranges, a damping device renders the instrument "dead beat." This instrument is so designed that it is especially sensitive at the upper portion of the scale, the divisions on the chart gradually increasing toward the top. At the working ranges the records show completely the changes that have occurred in the voltage, even though in many cases the variations are only small fractions of one volt. Instruments that tell the time steam is gotten up in the morning, report what kind of coal is being used, record the slightest variations when unattended, or detect the carelessness of engineers and others, are, in their use and mechanism, bound to be interesting, and our readers will be able to receive information on the instruments not described in this article by sending for catalogues. The New York office of the company is at No. 114 Liberty Street.

RUBEROID ROOFING.

RUBEROID roofing is waterproof, acidproof, and fire-resisting. It is made of the finest quality of selected wool, but a special feature is the material with which every fibre of this wool felt is thoroughly saturated. We refer to ruberoid compound, or gum, which is manufactured solely by the Standard Paint Company. In appearance the gum in its liquid state looks like crude rubber. It was this close resemblance to rubber which suggested the name "Ruberoid." Holding a piece of this compound between the fingers, one finds that it has all the elasticity of rubber as well as its toughness. Here the similarity ceases, for there is no rubber composition in the roofing, and it partakes of none of the corrosive or oxidizable nature of the former material. Unlike rubber, it does not dry up or become brittle, but retains its strength and flexibility indefinitely, instead of becoming hard and cracking. Retaining its flexibility, as it does, therefore, it also maintains the elasticity which is so valuable a feature of the roofing, ensuring a perfectly sound, seam-tight material, unaffected by the strains of expansion and contraction. Upon placing ruberoid in water, it is found to be a real non-absorbent; it is absolutely non-porous and will not admit moisture at any stage. It contains no tar or oil and will not melt and run from heat, and when a lighted match is persistently applied to it, the ensuing blaze quickly sputters and dies out. Ruberoid possesses unusual powers of endurance, as proved by practical tests on prominent factory buildings where the conditions are exceptionally severe. After twelve years of continued service some of these tested roofs are still living. Six years ago ruberoid roofing had attained such a wide prestige abroad that it was found expedient to establish a factory in Europe. A large plant was located at Hamburg, Germany, because of the convenient shipping facilities of that port, and it has always been worked to its fullest capacity to meet the great and increasing demand. Ruberoid is now used in practically every country across the seas. The Company's Amer-

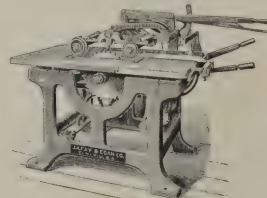
ican factories have been continuously enlarged to meet the wants of domestic trade, and at the present writing the largest extensions yet made to the plant, doubling its manufacturing capacity, have just been completed. The Standard Paint Company has connections at Chicago, Cincinnati, Boston, and its export interests are handled in London, Paris, Brussels, Hamburg, Berlin, Amsterdam, Copenhagen, and Sydney. The New York office is at No. 100 William Street, and at this address the Company has just issued a beautiful and copiously illustrated catalogue, which shows the various types of buildings using the ruberoid roofing in different parts of the world. It is apparent that the choice of specimen edifices, whether of churches, academies, factories, depots, elevators, etc., has been given to the most important and extensive of its contracts; but it is well known that a very important percentage of ruberoid roofing is applied to minor structures such as small poultry houses, barns, stables, and the like. These have no place in this fine exhibit, consequently the collection of edifices, from cathedrals to residences, from auditoriums to railway stations, are representative, and make this catalogue, called "A Ruberoid Album," the most valuable yet issued by the Standard Paint Company.

SLIDING BLINDS.

To our readers we make the announcement of the incorporation and removal of the Hartman Sliding Blind Company. This firm, which has been manufacturing for many years the popular patent inside sliding blinds, Venetian blinds, window and door screens, fly screens, etc., at Crestline, Ohio, has moved its factory to Bowling Green, Ky., where the new company has just erected commodious buildings, modern in all respects, and has equipped them with a complete line of machinery, the best that could be secured for its purposes, and which will enable the Company to largely increase the output of specialties. Being centrally located between north and south, east and west, and having one of the most efficient blind plants in the country, makes the firm able to fill orders promptly and to deliver goods to its patrons in much less time than formerly. It is understood that the new organization is favorably capitalized, and that the works are equal to the task of readily executing any sized contracts in the best possible manner. The Company has made special arrangements to manufacture its popular "Venetian Blinds," "Window Screens," and "Screen Doors," so well known in the United States, on a large scale, and it has added to its business sliding and folding partitions, which are coming into general use and are already in favor with architects and builders. Communications hereafter should be addressed to the Hartman Sliding Blind Company, No. 50 Lincoln Avenue, Bowling Green, Kentucky.

A NEW RIP SAW.

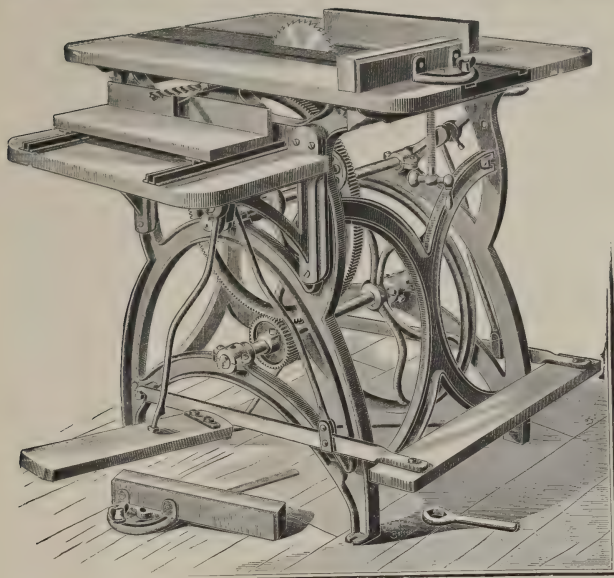
THOSE of our readers who are interested in wood-working machinery will find the device illustrated here with worthy of investigation. The engraving shows a new rip saw that may safely be claimed to possess no mechanical defects, one that is fully warranted by the maker, the J. A. Fay & Egan Co. Ripping machinery has always been one of its successful specialties, and this is one of the best. The saw is introduced on the market with the confidence that it will meet with success, as there is at present a large demand for a machine of this character. It is of medium size and designed for general work in lumber mills and wood-working shops, and short or long stock can be ripped at a very high speed with equal facility. Speeds to



No. 110 SELF FEED RIP SAW.

160 feet per minute can be furnished. The feed consists of feeding-in and feeding-out rolls, powerfully geared, and five inches in diameter. The rolls are adjustable to and from the saw, so that, if a small blade for fine ripping is used, they can be adjusted close to the saw on each side, thus insuring a feed which will not tear or twist the work. The table can be easily raised and lowered to accommodate itself to larger or smaller saws, and, when grooving heads are used, can be adjusted to suit the exact depth of cut. The largest saw used is sixteen inches in diameter, and when the table is at its lowest point the saw projects five inches above it. A catalogue will be sent on request by the maker, The address of the company is No. 209-229 Front Street, Cincinnati, Ohio.

MARSTON'S HAND AND FOOT POWER CIRCULAR SAW



Iron Frame, 36 inches high.

CENTRE PART OF TOP IS MADE OF IRON ACCURATELY PLANED, with grooves on each side of saw for gauges to slide in.

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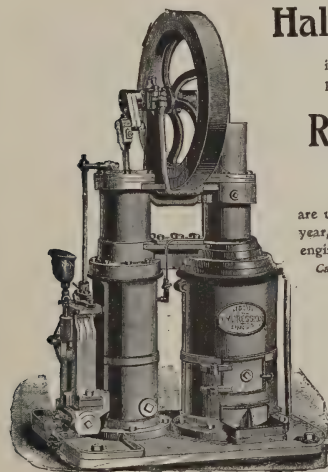
is quite enough for some people, but most people want water every day. If

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are used you can have water every day in the year, and your cook or stable boy is the only engineer needed. 25,000 in daily use. Catalogue "E," on application to nearest store.

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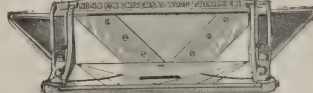
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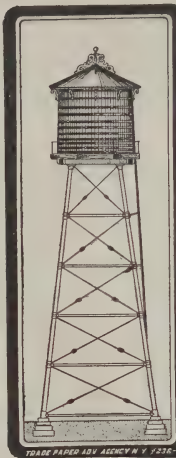


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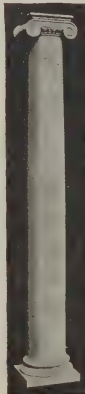
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are particularly well adapted for outdoor use. Many of the attractive residences shown in this and other publications are using columns furnished by us for Porch and Pergola work.

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This is the only book published which treats the art of Hand Railing throughout on the sectorian system, and the work seems to be done thoroughly. By this method any good workman who gives an hour or two to the study of the subject as exemplified in this little work, will be enabled to build a fair rail.

45 Illustrations, One 16mo. Vol. Cloth. Price. \$1.00

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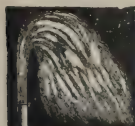
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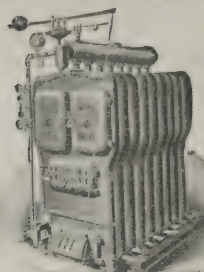
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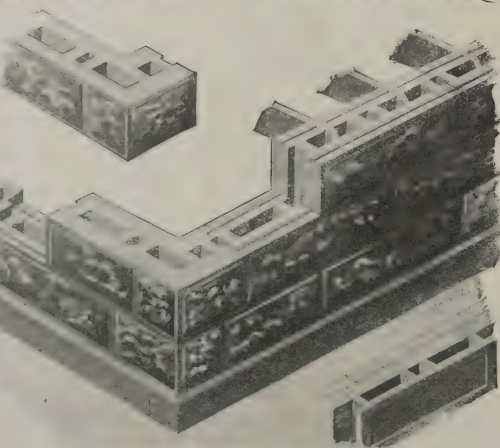
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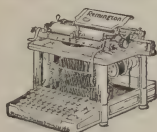
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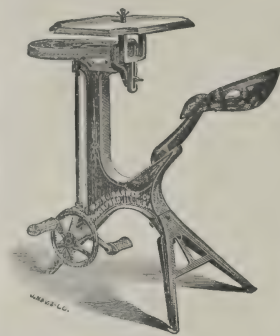
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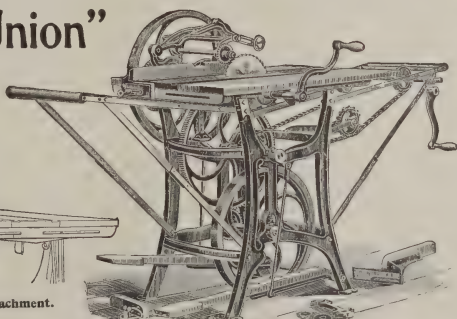
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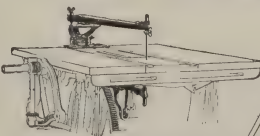
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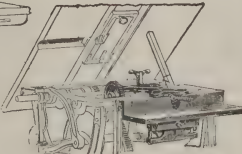
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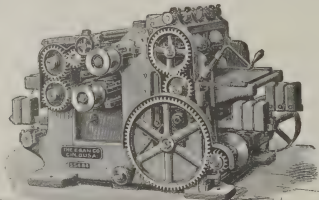
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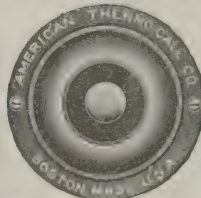
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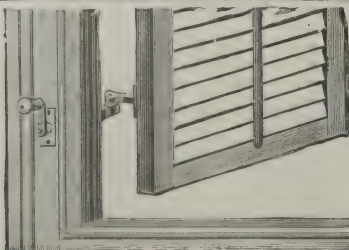
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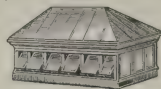
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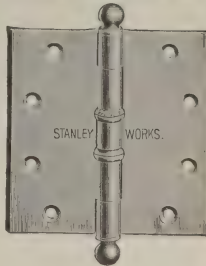
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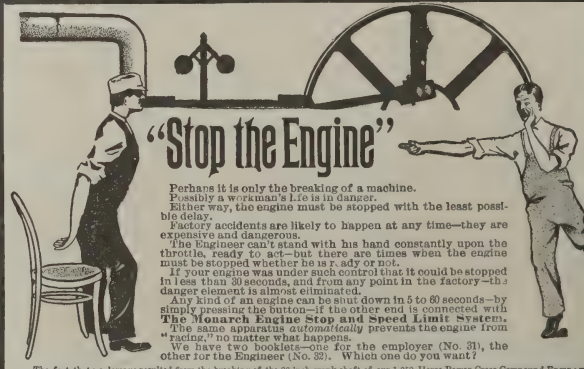
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THE LIVING-ROOM.

A RESIDENCE AT WYNNEWOOD, PA.—See page 83.

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*The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

CONSIDERABLE excitement has been aroused in Brooklyn over a red house. It appears that a certain house owner had a house that needed doing up, and he forthwith had it painted red, picked out with green. The tints chosen were not the gentle, subdued colorings generally associated with house paints, but were brilliant virile colors that left no doubt of their individuality or their existence. One did not have to consult a color chart to be sure of the tones of that dwelling. The red was a red red, and the green was a green green. And the colors were put on strong and vigorously. It was wickedly suggested that the red color was intended to make the house an attractive one to negro tenants, while the green was expected to appeal to persons of Irish extraction. The owner, it appeared, felt sure of getting one or other as tenants, and painted accordingly. Unfortunately for his purpose, the immediate next door neighbor to this red and green building was a gentleman of peculiar and artistic susceptibility. The red did not agree with him, and it gave his wife headaches. Vigorous protests followed, and the excruciating situation was well ventilated in the daily press. The incident has proved an exciting episode in contemporary Brooklyn affairs, and is a fine illustration of how the most peaceful communities can be disrupted by so apparently harmless a weapon as a pot of paint and a determined painter.

The time can not be far distant when the constant utilization of buildings will be a definite feature of city life. The modern city is more and more tending to concentration upon a limited area, and this phenomenon is the more marked because the greatest cities are the most modern cities, and the expansion of the

city into the country through its suburbs is equally characteristic of modern towns. People are realizing more and more every day that the more buildings are occupied, the greater the returns from them. And this is true whether the occupation brings in more rent or if the increased use is simply more use. Already pressure is being brought to bear upon boards of education to secure the greater utilization of school buildings, and the time can not be far distant when such structures, if not used continuously, will be put to much more varied uses, and much longer continued uses than they are now. The modern public school is an expensive structure—too expensive to be used only a few hours a day. A greater use means more expense, but it means greater advantage to the children. The movement has hardly more than begun, but it has certainly started. The schools are the first to feel it; churches can not long remain behind, and the theaters may be expected to follow suit. As a matter of fact, buildings are built to be used, and the more they are used, the better it is for those brought into their shelter from the streets.

ORNAMENTAL grounds are now so generally recognized as essential adjuncts to all good buildings that no class of structures is deemed complete without its garden setting. The school, the church, the hospital, the public library—if need be possible, the civic building—all must have their floral embellishment, as elaborate and as extended as space and funds will permit. It is a good sign of the times, this floral culture, for not only does it mean that flowers, plants, trees, and shrubs are more and more coming into daily life; but it means that people are encouraging themselves in a new love for nature and the beautiful; and, more important than all, it indicates a fonder appreciation of building and its possibilities. A garden around a building indicates that the relationship which exists between gardens and structures is not forgotten. The increased attention to gardens is an indication of increased attention to houses and buildings.

Good buildings are too few and quite out of proportion to the total number of structures annually built in this country. Architecture is not in its infancy so far as actual building is concerned; but it is most infantile and juvenile, undeveloped and inchoate so far as permanency of results are concerned. Modern buildings are apt to wear less well and less long than old buildings; and our generally absurd condition is demonstrated time and again by the erection of a most preposterous edifice of no art at all, although of large cost, in immediate proximity to a structure that gives some real evidence of artistic thought and care.

THE STYLE OF THE HOUSE.

PERHAPS no question is more frequently presented to the architect than the "style" in which any proposed dwelling is to be designed. The popular conception of the word "style" is a strange and confused one. Strictly speaking, there is no real opinion on this subject; but when a design is submitted the query seems to naturally present itself, "What is the style?" The very question proclaims its absurdity; for, if the asker knew what style was, the question would have been unasked.

The interrogation, however, will not down, and it remains one of the stock subjects of controversy between architects and clients. As a matter of fact, the real problem in house design is not that of style, but whether the design is good or not. A well built, well designed house has points of excellence that the most slavish adherence to style may never suggest. The merits of a house do not depend on its style, but on the way in which it solves its own special individual problems.

The confused notions which exist on the subject of style arise from a lack of knowledge of the historic styles of architecture. Very many people—it would be an exaggeration to say every one—have heard of the classic styles, of the Romanesque, the Gothic, perhaps the Renaissance, certainly of the Colonial, and possibly of some of the minor versions of these great historic periods of building which were sufficiently distinctive to be considered as separate styles. There is also, perhaps, a hazy idea that these styles constitute the material with which the architect must necessarily deal; so that if one does not have a house in the Chinese style, it may be Gothic, or Elizabethan, or half-timbered, or what-you-please. Presumably, says the unlearned in architectural history, every building must be in one style or another; some styles appeal to me more than others; my house must be in my chosen style.

All of this rests on the false notion that style consists in shapes of windows, kinds of columns, and forms of decoration. All of these things are essential to any knowledge or appreciation of the historic styles; but the most literal reproduction of even these essential elements will not make a house Venetian or English,

Renaissance or Gothic. Style is more than form, but is largely a matter of feeling; and architectural style, moreover, is something quite distinct from literary form, which is largely a matter of expression and feeling; but is simply a convenient word used to designate buildings of certain recognized styles that flourished under certain historic, geographic, climatic, materialistic, and temporal conditions, all of which have passed away, never to return.

Style in architecture, meaning by that term the creation of a design on old models, is dead. We can not have Gothic houses or Renaissance palaces or eighteenth century villas, because we no longer live in the times in which these buildings were designed and developed as a reflection of the culture of their periods. We may reproduce the forms, it is true; we must use the materials those wise old architects created; but we can not have their buildings again, we can not have their styles, because were we to reproduce these old structures, we would immediately employ an architect to make them conform to modern conditions of life. That task accomplished, there would be left only old forms with nothing of the living vitality which made them examples of a real style of architecture.

It is both unfortunate and fortunate that the modern architect must limit himself to the old styles in much of his work. It is unfortunate because the development of a new style is hindered amazingly; it is fortunate because much of the material left us by the older architects is good and wise and beautiful—so beautiful that, in many instances, the most skillful modern designer can not improve on it. It is fortunate also, that this is so, because in the rapid workmanship of the current day, all sorts of absurdities would be possible were the architect expected to depend solely on the resources of his own mind. Some results of such a procedure may be seen in the work of contemporary and living architects, and very singular and odd much of it is.

But, it may be asked, if we must depend on the old style for our architectural material in design, why not vary our houses and our streets by building in all styles? Why should not each client choose his favorite and build accordingly? The answer is very clearly that no possible progress can be made in architectural art under such a mode of working. Architecture is a progressive art, since it must meet new conditions of civilization every day. Of all the arts it is the least stationary. It is ever solving new problems, and ever solving them in a new way. It must be apparent that, if we choose the Egyptian style one day for a modern building; Greek the next; Roman the third; Romanesque the fourth, and so on through the ages, we will be constantly experimenting, studying, trying. The experience gained in one building will not help in the designing of the next. Everything must be done over, and everything must be begun at the beginning. The result is exactly paralleled by the comparison that, every time one took up a new book to read, one should begin with learning the alphabet and with the most elementary primer.

The hope of modern architecture is in continuity in style. Some styles lend themselves more readily to modern uses than others, and these are the ones to be used in modern building. A few years ago it was the Gothic that was especially favored; to-day it is the classic, with a decided tendency toward the fads of the French school. The Gothic revival failed, as every student of modern architectural movements is aware, but the reason of its failure is not so clearly understood. The Gothic failed partly because its own inherent qualities as a style were not understood, and partly because it was not sufficiently translated into modern forms and ideas. Even its history was not understood, nor its forms and manifestations appreciated as they are to-day. A second Gothic revival might not be more successful than that known as the Victorian, but it would certainly avoid many of the errors of that singular experiment.

We are living to-day in a classic revival which is more firmly planted because the classic is the style taught in our schools, it is a style easy to reproduce by the methods of copying and appreciation which abound in the offices of many of our best architects, and it has a certain monumental character which has caught the public eye. More good work has been done in the classic style than was accomplished in the Gothic, but only a faddist will affirm that it is the only style for modern uses.

Style is not so important as quality. The American country house has run through a dozen styles in the search for novelty, while had the merits of excellence in architecture been appreciated there would have been less thought of novelty and a keener wish for goodness. The modern house must be modern and must be designed in a modern way. This is very much more important than style; and it is by keeping this fact well in view that real progress can alone be accomplished.

TALKS WITH ARTISTS

BY BARR FERREE.

MR. KARL BITTER ON THE SCULPTURE FOR THE ST. LOUIS EXPOSITION.

MR. KARL THEODORE FRANCIS BITTER has long been known as one of the most capable and artistic of the decorative sculptors in America. Born in Austria, he came to this country when a young man of twenty years of age, and received his first important commissions from Mr. Richard Morris Hunt, long ago one of the most distinguished architects of America. Mr. Bitter's professional career has been one of unusual brilliancy and success, and he has executed many important commissions, including one of the bronze doors for Trinity Church, New York, the portrait statue of Dr. William Pepper in Philadelphia, sculpture for the Administration Building at the Chicago's World Fair, decorative sculpture, in terra cotta, for the Broad Street Station, Philadelphia, and sculpture for many private houses, among others those of C. P. Huntington, E.

seen. It is a journey of no slight formidability to find the ferry to Weehawken, although the sail up and across the North River is a pleasant outing for a summer's day. Landed on the coast of New Jersey, the traveler may mount an incredible number of steps that climb the steep cliff, or choose the easier method of ascent by trolley car. The latter brings you to the top of the hill, but nowhere near Mr. Bitter's place. That reached, however, the trouble is well repaid, not alone in the cordial welcome one receives, but in the real interest and novelty of the sculptor's dwelling. The house is a quaint application of the German castle to American conditions, by Mr. F. E. Wallis, the architect, who collaborated with Mr. Bitter in carrying out his unique ideas for a unique house. It is so close to the end of the cliff that quite a good deal of the dwelling is beyond it, and its gabled walls, its red tiled roofs and square tower present an ensemble at once picturesque and suited to the situation and the calling of the gentleman who built it. The studio is a large structure across a pleasant little garden, and is a lofty build-

"The general idea underlying the sculptural work at St. Louis," he said, "is that the buildings shall be appropriately adorned with sculpture symbolic of their purpose and meaning as well as enhancing their architectural effect. In addition, the courts and avenues will contain groups and figures having a relation to the general architectural and sculptural scheme, while in the center of the exhibition will be the Festival Hall and the Cascades adorned with elaborate groups and having as a background the Colonnade of States and the Art Palace. The historic figures and groups will be chiefly in the avenues leading to this central portion, while the Colonnade of States, at the rear of the Cascades, will afford an opportunity to commemorate, in an allegorical manner, the commonwealths composing the territory included in the Louisiana Purchase.

"It would take me, perhaps, too long to describe in detail everything that is proposed, but I should, perhaps, explain that the Cascades will be the culminating feature of the general design, the Festival Hall and



THE PERGOLA-HOUSE AT WOODMERE, LONG ISLAND.—See page 82.

T. Gerry, and Louis Stern, in New York; Cornelius Vanderbilt and W. K. Vanderbilt, in Newport, and George W. Vanderbilt, at Baltimore. Among other important commissions were caryatides for the Metropolitan Museum of Art in New York.

Notable as Mr. Bitter's sculpture has been in extent and in the importance of the commissions he has executed, he won additional and distinctive laurels as an administrator and executive director of sculpture at the Pan-American Exposition at Buffalo. The extraordinarily successful manner with which he performed the arduous duties of that office have recently received fresh recognition by bringing him the appointment of chief of sculpture of the Louisiana Purchase Exposition at St. Louis.

Mr. Bitter, while one of the most affable and approachable of men, has seen fit to perch his dwelling and studio upon a point which, while not inaccessible, is sufficiently remote from the busy life of New York to literally overlook it, and be, in a quite literal sense, apart from the busy metropolis in which he has won fame, and where the larger part of his work may be

ing generously lighted from the north, and containing a large, general studio, a private studio for the sculptor's individual use, an office for his secretary, and other rooms connected with the making of sculpture.

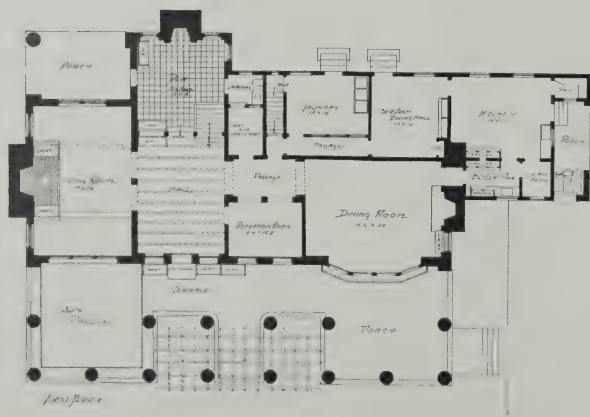
It is one of the largest and most complete "plants" of its kind in New York; and the charming, simple architecture, and the wonderful situation, with the river far below and the great city of New York just beyond, make it a most interesting place to visit. One does not wonder that Mr. Bitter produces delightful works of sculpture after one has seen the delightful environment in which he works. Nor, indeed, does one wonder why he should have left the busy city for this remote spot when its natural surroundings have been noted.

The great general studio was filled with models, with works executed, with plaster casts of work long since accomplished, and with work now in progress. An assistant called Mr. Bitter, who responded at once, and he was soon eagerly telling me what he hoped to accomplish at St. Louis, and what had already been accomplished.

Cascades being treated as a unit. The central fountain of the Cascades will be the Fountain of Liberty, by Herman McNeill, illustrating Liberty, Justice, Truth, and Patriotism. The side Cascades, by Isidore Konti, refer to the Atlantic and Pacific Oceans joined by the Louisiana Purchase.

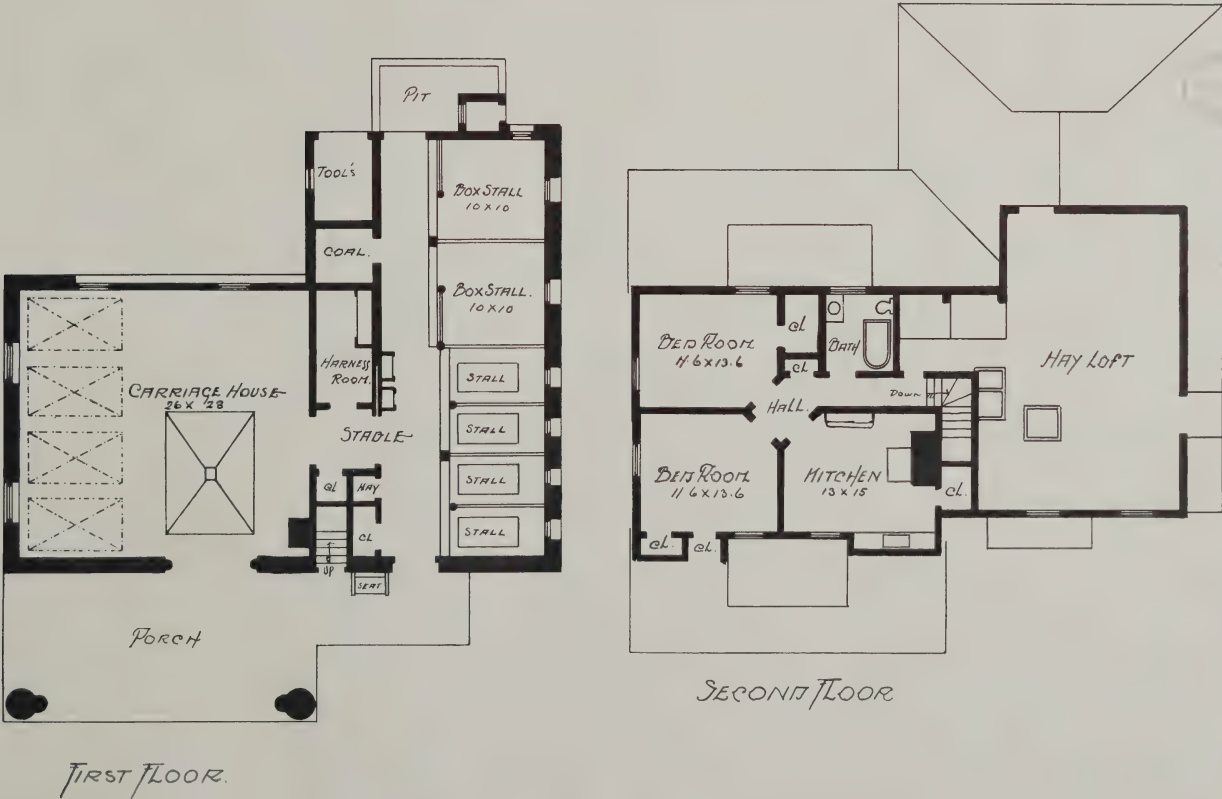
"Entering the exhibition through the formal gateway on Lindell Avenue, the visitor finds a noble sculptural composition, the Apotheosis of St. Louis, expressing the welcome of the city of St. Louis to her new guests, a group by Mr. Charles H. Niehaus, which he has conceived in a very fine manner, and which seems destined to be in every way worthy of this capable artist. Beyond this, in the main axis, is to be the St. Louis Purchase Monument, a large column surrounded with symbolic and historic groups, and which will be my own chief contribution to the sculpture of the exhibition. In the courts of the central part, and the avenues leading to the Cascades, will be works by Daniel C. French, E. C. Potter, Phimister Proctor, J. Scott Hartley, Charles Albert Lopez,

(Concluded on page 87.)

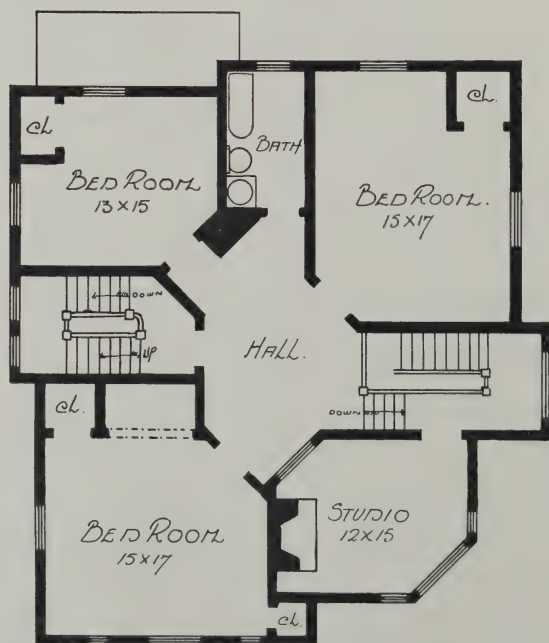
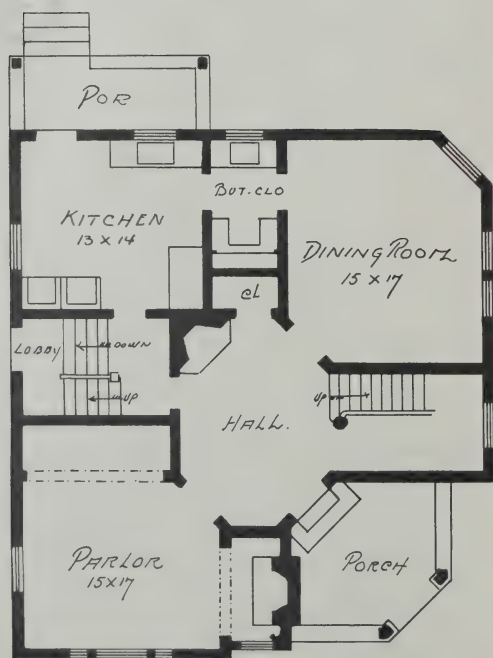


A HOUSE AT WOODMERE, LONG ISLAND.—See page 82.

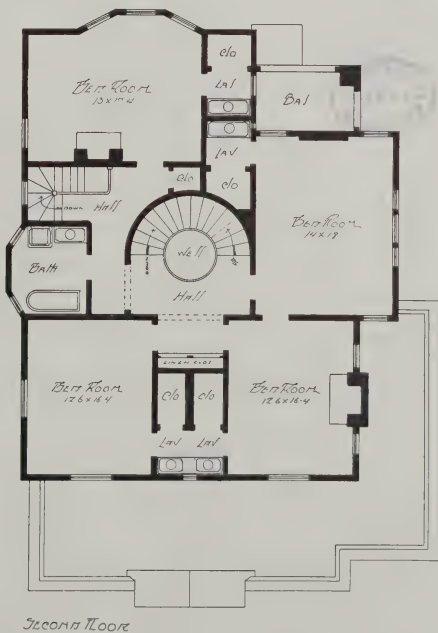
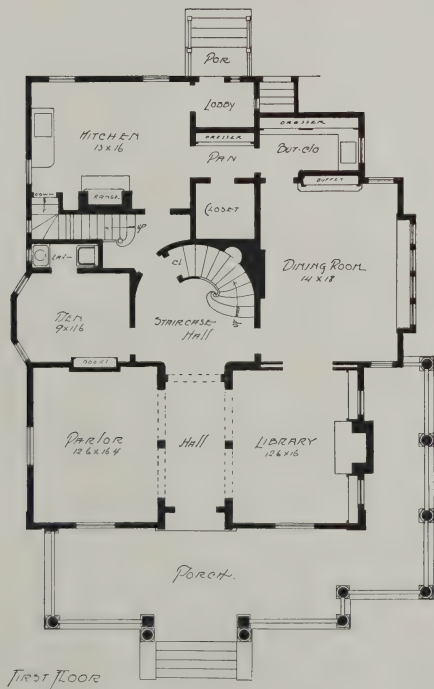
MR. CHARLES BARTON KEEN, ARCHITECT.



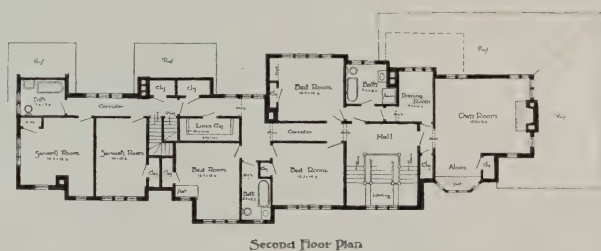
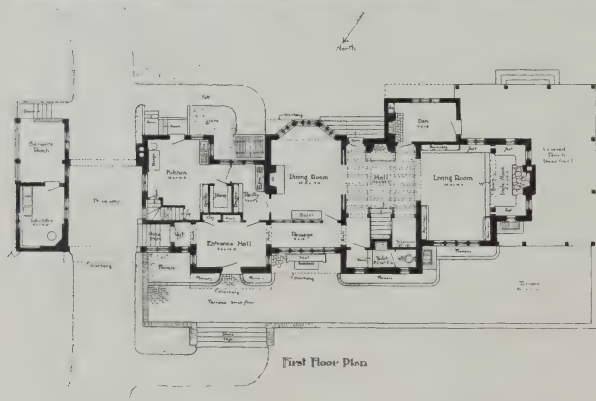
A STABLE AT WOODMERE, LONG ISLAND.—See page 82.
MR. CHARLES BARTON KEEN, ARCHITECT.



A DWELLING AT GLENWOOD, N. Y.—See page 82.



RESIDENCE OF MRS. M. E. SMITH, PROSPECT PARK SOUTH, BROOKLYN, N. Y.—See page 85.
MR. JOHN J. PETIT, ARCHITECT.



A RESIDENCE AT WYNNEWOOD, PA.—See page 83.

MR. DAVID KNICKERBOCKER BOYD, ARCHITECT.



ENTRANCE HALL, LOOKING TOWARD MAIN HALL AND STAIRWAY.



DETACHED LAUNDRY AND SERVANTS' PORCH.



DINING-ROOM.

A RESIDENCE AT WYNNEWOOD, PA.—See page 83.
MR. DAVID KNICKERBOCKER BOYD, ARCHITECT.



DINING-ROOM.

RESIDENCE OF DR. J. ALLEN OSMAN, GLEN RIDGE, N. J.—See page 84.

MR. WARRINGTON G. LAWRENCE, ARCHITECT.



THE LOWER TERRACE.



THE UPPER TERRACE.

MR. JAMES B. DICKSON'S GARDEN, YONKERS, N. Y.—See page 83.



HALL.



RESIDENCE OF ALBERT J. DRAYTON, ESQ., JERSEY CITY, N. J.—See page 87.
MESSRS. CHARLES HENRY DETWILLER AND A. L. C. MARSH, ARCHITECTS.



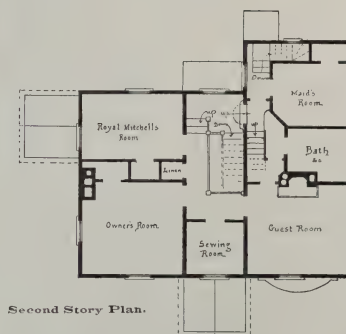
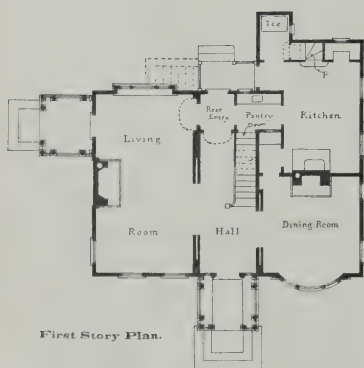
DINING-ROOM.



LIVING-ROOM.

RESIDENCE OF ALBERT J. DRAYTON, ESQ., JERSEY CITY, N. J.—See page 87.

MESSRS. CHARLES HENRY DETWILLER AND A. L. C. MARSH, ARCHITECTS.



COTTAGE OF CHARLES E. MITCHEL, ESQ., AT EAST ORANGE, N. J.—See page 84.
MR. JOY WHEELER DOW, ARCHITECT.



RESIDENCE OF ALBERT J. DRAYTON, ESQ., JERSEY CITY, N. J.
MESSRS. CHARLES HENRY DETWILLER AND A. L. C. MARSH, ARCHITECTS.



RESIDENCE OF REV. CHARLES BUCK, YONKERS, N. Y.
MR. G. HOWARD CHAMBERLAIN, ARCHITECT.

TRIPLE WINDOWS.—See page 82.



DOUBLE DUTY FURNITURE.

FURNITURE capable of doing double duty is increasing in variety, says the Sun, as the wants of people who move often or who live in little space are being consulted.

Chairs and tables that have more than one use and appearance, convertible couches, desks and chiffoniers of double character are brought out in materials varying from inexpensive pine to fine oak and walnut. Curious attachable, collapsible and adjustable belongings are at hand for the transient campers in studios and the flat dwellers who would alter the character of their rooms to suit occasion.

The trunk that when empty can be made to do duty either as a bureau or a writing table is new in the field. The melodeon that has a desk attachment is a boon to the music-lover in cramped quarters. The crib that can be attached to the mother's bed by night and shut up snugly out of place by day is an obvious convenience.

The settee-table solves a trying problem for the hall-room occupant. Stands for plants are contrived so as to be turned into a chair when the owner pleases.

Library steps are available which can be altered at will into a chair.

A swinging bed for infants admits of transformation into a cabinet or *cloture* when the possessor so desires. A table is made with adjustable layers to the leaves so that its common day surface may be used for the pressing of trousers or skirts, the preparation of viands, etc., and its dress-up effect answer for card games or for a dainty tea equipage.

The shower bath is now provided with a sitting-room exterior that gives little hint of its true character. The baby's go-cart is out with an attachment that converts it when desirable into a very ornamental and stationary-looking appointment. Folding fenders and collapsible wood boxes are among the cold weather furnishings contrived so as to take as little room as possible when out of use. And coal vases come with a two-story attachment that converts them into lamp stands or jardinières.

UTILITY OF DOUBLE WINDOWS.

MR. B. WARD has been discoursing before the Liverpool Architectural Society on weather-tight windows. He prefaced his remarks by saying that he sought for information as to what was needed to keep a window weather-tight under the most extraordinary conditions, and he ended his remarks thus: I have come more and more to the conclusion I arrived at years ago, that this country of ours, with its "climate of samples," requires the almost universal adoption of double windows: double casements or sashes, with single or double frames. In Canada, I believe, they go further. They screw up their double windows inside and out during the winter, and provide for the ventilation (or perhaps they don't) by other means. With double windows simple details will be quite good enough; the space between the sheets of glass is a splendid air cushion, stopping wind coming through, and as for the heat and cold I suppose there is not a better non-conductor of heat than a mere layer of air. I am told that two sheets of glass with the air between them are as efficient as a nine inch brick wall, and that a single pane of glass has rarely twenty-five per cent. of that efficiency. As regards light, two clean panes of glass stop less light than one dirty pane; though that is not meant for an argument.

A CHINESE DINING-ROOM.

THE New York Herald prints a description of a dining-room in the Chinese style arranged in a modern American house.

The lantern was obtained in Mott Street for \$2, while the Bon-Kei, or miniature landscape upon the tray in the center of the table, was obtained in Fifth Avenue. The chairs are the result of considerable effort. They were picked up one at a time, but as they are so nearly alike it will not occur to those who "draw up to the festive board" that this set is a mute but substantial proof of what can be done by the collector in the "one at a time" method. They cost about \$10 apiece, and I have six of them. The table came from a Custom House sale, and cost \$16.50. In one of the windows I will have made a simple side-board in Chinese style, and as the table and chairs are black, the woodwork and floor will be stained that color. The walls, divided by a plain band of wood, with a bit of stuccoed design beneath, are to be red.

A HOUSE AT WOODMERE, LONG ISLAND.

THE house illustrated on the cover and on pages 69 and 70 presents a novel type of house which has recently been erected for the Woodmere Land Association, of which Mr. R. L. Burton is the owner.

Much attention has been given in this dwelling to the perfecting of a complete interior arrangement, combined with attractive and artistic elevations, and more particularly to the conveniences of the kitchen, its dependencies, and the servant quarters. One of the most important factors which has been admirably considered in this house, as well as in all of the houses built by the Woodmere Land Association, is the attention given to the kitchen and the servants' hall, which affords a place for dining and for recreation, and precludes the usual custom of servants dining in the kitchen. Another feature worthy of note is the private stairway which leads to the third story containing a separate room for each of the servants, and a well-appointed bathroom devoted to the servants' use. This subject is one which should receive wide attention from both the profession and the layman, for while much consideration and study is given to the designing of a house, and to the planning of an interior arrangement of rooms, comparatively little attention is given to the kitchen and the servant quarters. The thought of the general mind has been, to a certain degree, favorable for such a necessary acquisition to a well-regulated house, and this Mr. Burton has demonstrated in the fifty houses which he has erected, during the past two years, at Woodmere, Long Island, several of which will appear in the future issues of the BUILDING MONTHLY. The house which is illustrated is one of a novel and attractive style, with low, graceful roof lines, twin porches connected by a pergola, and the great stone chimneys, which are architectural features in themselves. The underpinning, chimneys, and the main part of the first story is constructed of rock-faced stone, which is laid with rough faces. The remainder of the buildings is of wood, and the exterior walls are covered with shingles, and painted white. The trimmings are also painted white. The columns to the porches are of stucco. The roof is covered with shingles, and is left to finish a natural silvery gray color. The porch and pergola floor are paved with red brick laid herring bone. All the exterior walls of the house are lined with brick, giving greater warmth for winter use. Dimensions: Front, 97 ft.; side, 44 ft. 8 in., exclusive of porches. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The plan shows a central hall, which is trimmed with oak and finished in a dark Flemish brown. It has a high wainscoting and a beamed ceiling. At the end of the hall is an ornamental staircase with a newel post formed of a solid column rising from the floor to the ceiling, while corresponding columns and pilasters form an arcaded effect, the whole separating the den, which is placed beneath the staircase landing, and at a lower level than the floor of the main hall. This den is treated in a similar manner to the hall, and has a Dutch tiled floor, and open fireplace, and paneled seats.

The reception-room, to the right of the entrance, is trimmed with white pine and is treated in an artistic and dainty manner. This room is practically enclosed with glass, for the numerous doorways are glazed with leaded glass, and the windows are French casements.

The living-room is trimmed with chestnut, and it is provided with a massive beamed ceiling and a large open fireplace with Indiana limestone facings, a brick hearth and a mantel shelf with hood. Underneath this hood are placed electric lights with pleasing effect, and providing ample light for reading. On either side of the fireplace are paneled seats. A very attractive feature of this room is the group of three French casement windows which open into the sun parlor, which is heated, and which is formed by the enclosing with glass of one of the porches, a feature which is becoming a necessity with the new modern country house.

The dining-room is trimmed with white pine and is treated with a harmonious effect. There is a high wainscoting, and an open fireplace with brick facings and hearth, and a mantel. The bay window has casement windows, which also open on to the porch.

The butler's pantry is fitted with dresser, drawers, sink, etc. The kitchen, servants' dining-hall, and laundry are trimmed with white pine and are treated naturally, and each is fitted and provided with all the best modern conveniences. The kitchen has dresser, range, sink, store closet, refrigerator, etc. The coal closet and lavatory are conveniently located.

The second floor is trimmed with white pine, treated with white paint, except the hall, which is finished same as the hall of first story. This floor contains one large bedroom provided with a large dressing-room and a bathroom for the owner, and also four other bedrooms, two bathrooms, and a sewing-room. Ample

and well-fitted closets are provided for each bedroom, three of which bedrooms have fireplaces. The bathrooms have tiled wainscoatings and paved floors, and are furnished with porcelain fixtures and exposed nickelplated plumbing.

The third floor contains several bedrooms, the servants' quarters, and bath, and trunk rooms. A cemented cellar contains the heating apparatus, fuel rooms, and cold storage. Mr. Charles Barton Keen, architect, 1604 Chestnut Street, Philadelphia, Pa.

A STABLE AT WOODMERE, LONG ISLAND.

THE stable which is illustrated on page 71 has recently been erected at Woodmere, Long Island, for the Woodmere Land Association. The building is designed in harmony with the house to which it belongs, and which is illustrated on the cover and also on pages 70 and 71 in this issue.

This stable is built with all the best modern and up-to-date conveniences, and it contains a large carriage room, well ventilated stable, and a coachman's suite of rooms in the second story. The building is constructed of rough-faced stone for the first story and white painted shingles for the second story. The columns which support the porch roof are of stucco. The roof is covered with shingles and is left to weather finish. Dimensions: Front, 54 ft. 5 in.; side, 44 ft.

The porch has a cement floor, and also the floors throughout the first story are finished in a similar manner. The carriage room is provided with a carriage wash, ample space for six carriages, water supply, hot water heater, etc. The walls of the carriage room are cemented. The harness room is fitted with glass cases, etc. The stable contains four single stalls, two box stalls, which are well drained and ventilated, and furnished with ornamental iron fixtures. There are also such conveniences as hay drip, food trough, water trough, etc., together with a coal bin, tool house, and pit.

An outside stairway leads to the coachman's quarters, which are most complete, comprising a large kitchen fitted with range, dresser, and sink, two bedrooms, and a bathroom. There is also a large hay loft on this floor. Mr. Charles Barton Keen, architect, 1604 Chestnut Street, Philadelphia, Pa.

A DWELLING AT GLENWOOD, N. Y.

THE cottage which is shown on page 72 has been erected for the Metropolitan Building Company at Glenwood, N. Y. The underpinning is built of rock-faced blue stone. The superstructure, of wood, is covered on the exterior framework with matched sheathing, building paper, and shingles, which are stained a dark soft brown color, and the trimmings are painted white. The roof is covered with shingles and is stained a dark green. Dimensions: Front, 37 ft.; side, 40 ft., exclusive of porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.; third, 8 ft.

The plan of the interior is quite unusual. The entrance is from a porch with a floor placed three steps below the level of the main floor. The hall, which is octagonal in form, is trimmed with oak, and contains an open fireplace which is built of brick and is provided with a tiled hearth and facings and a mantel of oak. The staircase is of oak, and of an ornamental character. The parlor is trimmed with oak, and contains two nooks, one of which contains an open fireplace built of brick, with the facings and a hearth of tile and a mantel of oak. The dining-room is also trimmed with oak, and has a paneled wainscoting of oak. The butler's pantry is trimmed with North Carolina pine, finished natural, and is furnished with drawers, dressers, sink, etc. The kitchen is finished with North Carolina pine trim, and is provided with stone laundry tub, hearth and range, sink, dresser, etc. On the first landing of the staircase is the den, fitted with an open fireplace and a cluster of windows. On the main level of the second floor are three bedrooms, provided with ample closets, and a bathroom furnished with porcelain fixtures and exposed nickelplated plumbing. There are two bedrooms and ample storage space on the third floor. A cemented cellar contains a furnace, fuel room, etc.

TRIPLE WINDOWS.

Two recent examples of triple windows are illustrated on page 81. One is from the residence of Albert J. Drayton, Esq., Jersey City, N. J., Mr. Charles H. Detwiller, architect, Mr. A. L. C. Marsh, associated, 99 Nassau Street, New York; the other is from the residence of the Rev. Charles Buck, Yonkers, N. Y., Mr. G. Howard Chamberlain, architect, 1181 Broadway, New York.

These windows are both excellent examples of this type of window, which is always effective when placed in ample wall area, and which is particularly happy when, as in these instances, it is enriched with fine detail, well designed in itself, and pleasingly spaced and combined.

Fire Protection

FIRE PREVENTION.

THE term "fire prevention," says an English correspondent of the weekly *Scientific American*, is too often misunderstood, inasmuch as fire extinguishing, or rather fire-brigade work, is what the majority has in its mind, and many towns consider themselves well protected if they can boast of an efficiently manned fire-engine establishment. In reality, however, fire-brigade work, as such, occupies but a minor rôle in the general system of fire protection, for really well protected towns must owe their position in the first place to properly applied preventive legislation, and a preventive practice based on the experience and research of architects and engineers, fire experts, fire-brigade officers, insurance and municipal officials. Fire protection is a combination of fire prevention, fire combating, and fire research, and under the heading fire prevention should be classed all preventive measures, including the education of the public. Preventive measures may be the result of private initiative, but, as a rule, they are defined by local authorities, and contained partly in building acts and partly in separate codes supplemented if necessary by rules for the treatment of extraordinary risks.

SMOKE AS AN EXPLOSIVE.

IN a recent lecture by William McDevitt, insurance inspector, the explosive quality of hot smoke was demonstrated. The author explained that in a fire, free carbon rises and mixes with hydrogen; methyl-alcohol, creosote, and other gases are also present in smoke. These gases become heated to the point of ignition, and an explosion is the result. Of itself, smoke would explode at a temperature of from 600 to 800 degrees, but frequently the smoke is ignited by sparks or by coming into contact with a flame. Very thick smoke, when ignited, becomes a pillar of flame, and rolls through a room with such force as to shake the walls and make the windows rattle. If sprinkled with water there would be no explosion. Where formerly firemen tried to keep smoke in under the impression that it smothered the fire, they now immediately break in windows or skylights to let it out.

THE FIRES OF 1902.

THE Insurance Press points out that during the first six months of 1902 three conflagrations took place which destroyed property valued at more than \$8,000,000—in Waterbury, Conn.; Paterson, N. J., and Atlantic City, N. J. In Waterbury twenty-nine buildings suffered; in Paterson 456 buildings were either totally burned or damaged; the Atlantic City blaze spread to forty-five buildings. Each of these cities found itself unprepared for such wholesale destruction as was wrought by these disastrous fires, both as regards good buildings and adequate facilities for fighting fires of such magnitude. Ottawa, Ont., was visited twice by conflagrations within a few weeks' time—one loss amounting to about \$1,000,000 and the other to about \$400,000. Ottawa has now had three bad fires in as many years—the first one occurring in 1900, doing about \$15,000,000 damage. Yet, when the second one came, the city found itself with only one pumping station, and that one broke down almost as soon as the fire started, causing a delay of forty minutes in getting any quantity of water on the flames. In 1901 none of the fires in Sioux City, Iowa, spread beyond the buildings in which they originated; but last year two did, and an additional loss of more than \$500,000 was the result. One of these was the \$900,000 fire which wiped out the extensive packing house of Armour & Co. The experience of Louisville, Ky., in 1902, was particularly unfavorable as compared with the previous year, so far as losses on buildings in which the fires did not originate were concerned. The record for last year was sixty-four exposure fires, with losses of \$194,633; and for 1901 sixty-five such fires, and losses of only \$28,222. The fires of last year involved losses on 271 frame buildings and 347 of brick construction. In New Orleans last year fires got away from the firemen in 180 cases, which was more than double the number of exposure losses in the previous year. The spread of four fires in Worcester, Mass., in 1902, entailed additional losses of \$98,853, while in 1901 one fire got away from the department, causing an exposure loss of only \$525. Kansas City, Mo., made a very bad record last year, with 899 spreading fires, as compared with seventy-three in 1901. The worst record of all was made by New York City, all things considered, where in 1902 a total of 384 fires spread from the first buildings.

A RESIDENCE AT WYNNEWOOD, PA.

THE residence illustrated on pages 67, 74, and 75 has been built at Wynnewood, Pa. The building is a long, low, two story one, with the first story walls built of reddish brown bricks and the remainder of the house of half timber construction. This half timber work is of heavy timbers built up solidly on double sheathing interlined. All these timbers, as well as the larger of the gables, the porch posts, and other woodwork, are rough on the faces, and are planed here and there by hand, which gives a pleasing play of light on the surface. The timbers are stained and varnished, the color being a very dark brown. The mortar between the beams is almost white, with a roughly scratched surface. The shingles of the roof are laid to uneven lines, and are stained a dark moss green. The porte-cochère, instead of being an unsightly projection, as is so often presented, is, in this particular case, an archway under and through the house. The drive entrance is under this archway, and leads through a vestibule into the entrance hall. To either of these doors the attendant has but a few steps to take from the butler's pantry, and as this hallway is apart from the living-quarters, there is a less likelihood of an interruption by the entrance of strangers. Connecting the hallway with the body of the house is a passage leading to the main hall.

The hall is trimmed with dark Flemish oak, and has a paneled wainscoting and a beamed ceiling with carved figures placed here and there with a picturesque effect. The staircase is of an attractive design, with newel posts rising to the ceiling and supporting beams. The fireplace has a brick hearth and facings and a mantel. The lavatory beneath the stairway is a convenience.

The living-room is also trimmed with dark Flemish oak, and has bookcases built in, and an angle nook with a raised floor, which is provided with a broad stone fireplace, with rough stone facings and hearth and a mantel shelf. There are paneled seats on either side of the fireplace, and the whole is separated from the living-room by a heavy beamed archway supported on square posts. The den is conveniently located, and has an open fireplace with brick facings and hearth and a mantel. The dining-room is trimmed with white pine and is treated with white enamel paint. It has a high paneled wainscoting and an open fireplace finished with tiled facings and a hearth and mantel. The passageway, with its row of quaint casements on either side, is one of the features of the house. The butler's pantry is fitted up with sink, drawers, dressers, etc. The kitchen is provided with a sink, drawers, dressers, store pantry, stairway, etc. One of the most novel features is the laundry and servants' porch, which is placed on the far side of the house, and is practically a detached building. In designing a house in this style it is often difficult to manage the porch, which is so necessary in our climate, but in other instances it is unobtrusively placed on the end and corner, away from the entrances. A large brick paved open terrace extends along the front. The steps to the terrace, porches at kitchen and laundry, so frequently slighted in design, are here made artistic features of the house.

The second floor contains four bedrooms, two bathrooms, dressing-room, large linen closet, besides two servants' bedrooms and bathroom. These rooms are all treated with white enamel. The bathrooms are paved and wainscoted with white enamel tile, and are furnished with porcelain fixtures and exposed nickel-plated plumbing.

All the windows in the house are casements filled with leaded glass; there are many of them in each room, insuring a delightful coolness in the summer, the season of the year when the house is to be occupied. The long, narrow, shape of the structure lends itself admirably to an arrangement of rooms and windows that makes it an ideal summer residence. Mr. David Knickerbocker Boyd, architect, Harrison Building, Philadelphia, Pa.

MR. JAMES B. DICKSON'S GARDEN, YONKERS, N. Y.

DELIGHTFUL parts of the garden belonging to James B. Dickson, Esq., at Yonkers, N. Y., are shown in the photographs reproduced on page 77, one of which shows the upper terrace and the other the lower terrace. The photographs are, indeed, views of the same part, taken in such a way that one shows what may be termed the interior of the terrace, while the other shows its exterior or bounding wall. The whole garden is of unusual beauty, containing many fine trees, beautiful lawns, and well laid out walks. The terrace, with its finely designed steps and walls, is perhaps the most interesting feature. It is a charming place, brought to a high degree of cultivation and a fine example of American taste in gardening.

Good workmanship is to be preferred at all times to showy work. It counts in the end. Plain, substantial work is the most economical and more lasting.

The Garden

WORN-OUT SOILS.

THERE is only one cure for a garden which has got into the "worn-out" state, says an English paper, and that is to "clay" it; manure of any kind only intensifies the bad condition. Early in the autumn a quantity of strong loam or clay, the stiffer the better, should be obtained; of course, the surface soil is the best, but subsoil will do provided it is yellow or red in color, and not one of the barren green or black unoxidized clays. When nearly dry, this should be passed through an inch meshed sieve and the large lumps broken, then strewn over the surface at the rate of one bushel or so per square rod, and allowed to wash in with the autumnal rains. The finer the state of division and the more it is worked about with the soil, the sooner will it tell; in any case, the good effects will be more apparent a year or two after the application than in the first season. Naturally, as the fine clay particles eventually get washed down, the treatment will want renewing from time to time.

One other thing it is well to keep in mind in dealing with all garden soils of the lighter class, to keep them as tight as possible below. Garden soils with their deep cultivations and large dressings of manure, are often far too loose below the surface layer—so loose that water runs through them too quickly and can not return again by capillarity. Whenever the texture of the subsoil is anything better than clay, it should be kept firm and consolidated, and the surface only should be loose and powdery to serve as a mulch. Speaking generally, the growth of plants is more dependent on the supply of water than of manure, and this is particularly likely to be the case in town gardens with their walls and their highly drained subsoil. Though gardeners recognize this truth when dealing with their pot plants, it is not always seen how dominant a factor it is out of doors, and in how many ways the character of the vegetation is affected by the behavior of the soil toward water.

THE ROYAL BOTHY AT FROGMORE.

THERE has recently been erected in connection with the royal gardens at Frogmore a bothy of some unusual interest. The building has accommodation for twenty-four unmarried gardeners. It occupies three sides of a square, and is two stories in height, in the old English style of architecture. On the right of the main entrance, over which there is a handsome clock, there is on the ground floor a dining-room 25 feet by 30 feet, a reading and recreation room 27 feet by 15 feet, and isolation or sick rooms with separate entrance. The latter comprise a bedroom 11 feet by 10½ feet, a sitting-room 16 feet by 15 feet, with large bay window, and a bathroom, lavatory, etc. This suite of rooms, which may be called a small hospital, is entirely cut off from the rest of the building, and is complete in every way. In the left-hand wing of the building of the caretaker's house, which corresponds to the sick rooms just described, are stores, larder, etc.; and a kitchen 25 feet by 21 feet, with all kitchen requisites, cooking range, etc. A spacious hall and staircase divide the kitchen from the dining-room, but a connection between them is provided by a service passage behind the staircase. The sleeping accommodation for the men is on the upper floor. Each man has a separate bedroom, about 10 feet by 8 feet, insuring privacy; and there are three larger rooms for the accommodation of the foremen, these measuring about 15 feet by 10 feet. All the rooms open into a wide corridor running round the building. Behind the main staircase is a lavatory 27 feet by 19 feet, with two bathrooms, 9 washing basins, etc., and a boot-brushing room. Underneath the lavatory and the dining-room, covered by a steel and concrete floor, is the stokehole and the boiler house for the east section of the garden. This is 40 feet long by 19 feet wide, and the stokehole part is about 17 feet high, and well lighted.

USES OF WEEDS.

THERE are uses which the "weeds" serve, says the Springfield Republican. Emerson defined a weed as "a plant whose virtues have not yet been discovered;" but it is also a plant whose virtues, though known, are not employed. The sumac is good for the dyer, and so are many other shrubs and herbs which are now neglected because of the qualities discovered in coal-tar, which has filled the factories and the homes of the people with aniline dyes—cheap, but not lasting, and no way comparable in color to the dyes which our ancestors, and the Indians before them, extracted, infused and distilled from the native growths.



COSTLY HARDWOOD FLOORS.

BEGUN with an idea of sanitation and an appreciation of their durable qualities, the fad for hardwood floors, says the Sun, has grown to such an extent that no well-built house is without them to-day, while the gorgeousness attained by some floors is illustrated by one laid in vermillion wood, said to be the most expensive imported, whose vivid natural scarlet is accentuated by a high polish and by a border of peacock blue. The latter color is obtained by staining.

There are nearly thirty other varieties of fashionable wood for flooring, as expensive as they are beautiful, and all used in floors of a widely different character from the strongly contrasted patterns of stained parquetry that have only recently lost their prestige in New York, and that contained hundreds of pieces to the square foot, and cost many thousands of dollars.

Even floors of Oriental pattern, laid in rooms furnished in Oriental style, do not have any staining in the superb color combinations. In working out rich Oriental designs, all the red, pink, green, gold, and lovely brown and cream colors are produced in woods of natural color.

While the fashion in floors leans to darker tones, in effects produced by the streaks and shades of color of a single wood, the somewhat less expensive and useful oak floors, in fine parquetry of light shades of one tone, such as have lately been laid in the White House, are very popular.

In conformity with the style of having floors to harmonize with their surroundings appear natural woods of many colors and tints; the rich-hued Circassian walnut, from the shores of the Black Sea; golden ebony, shining ruby, and bronze-red mahogany; courbari, with stripes of reddish gold; satinwood; white mahogany, with its sharply defined pale-brown streaks and its highly burnished surface; yallapa, whose greenish gold stripes gleam softly under gliding feet, and many another product of the East and West Indies, of Africa, the Sandwich Islands, South America, and other distant lands.

Through Holland comes the teakwood, greatly prized for fine flooring because of the natural oil which preserves the wood and adds to its value, and this, combined with rosewood decorations, is very popular for hall and dining-room floors, the floors of dens and smoking rooms.

Generally speaking, the most handsome floors to-day are without ornamental borders, and the fine oak floors seldom have even fancy edges. The corners are mitered or fitted into a diamond-shaped piece of parquetry which sometimes reproduces in replica the design of the floor.

Some people order richly ornamented borders for rooms of certain characters, or borders in which the ornamental design is scarcely perceptible. Floor designs are now carried out by arranging the parquetry with the grain or natural streaks of the wood reversed, although the single-color scheme is carefully preserved, and pieces are so set together that they have the appearance of cubes and blocks built upon each other, giving a peculiar effect of perspective to the floor, as of reflections seen in still, shining water.

The exquisite hairlike streaks in a beautiful wood from Cuba, showing shades of light green with white in a very hard and fine-grained wood, are particularly popular in modern floor making; but in expensive woods nothing else is so much used for floors in the houses of the very rich as the fiery tigerwood and the white mahogany.

The latter is not white at all, but is of a glistening cream color, with fine streaks of varying widths, of light shades of brown so clearly marked that brown and cream appear separate pieces of wood. This is one of the most fashionable woods in the market for fine cabinet making, especially for bedroom and boudoir furniture, while its uses in parquetry are usually confined to rooms of state.

One of the fads of the hour—and one of such enduring character that it is likely to remain a fad for a long time to come—is for old Dutch floors in halls and smoking rooms, made of rosewood with small inlaid wedges or ornaments of darker wood at wide intervals. Sometimes the dark wood is laid in a narrow border around squares of the other wood.

Some of the richest parquetry floors in New York were laid for the Vanderbilts as far back as twenty-five years ago, and it is a curious fact that these handsome and costly floors are not duplicated in style anywhere to-day. The fancy for contrasted parquetry has given way entirely to the more artistic fashions of the present.

COTTAGE OF CHARLES E. MITCHEL, ESQ., AT EAST ORANGE, N. J.

THE cottage illustrated on page 80 has been erected for Charles E. Mitchel, Esq., at East Orange, N. J. The underpinning is built of rubble stone. The superstructure, of wood, is covered on the exterior framework with matched sheathing and rift cypress shingles, wide gauge, which are oiled and then painted two coats of marine white paint. The blinds are painted green. The roof is covered with shingles and finished natural. Dimensions: Front, 37 ft.; side, 34 ft., exclusive of porches. Height of ceilings: Cellar, 7 ft.; first story, 8 ft. 6 in.; second, 8 ft.; third, 7 ft. 6 in. The porches have red tiled floor and wooden seats.

The plan of the interior shows a central hall, which is trimmed with cypress, and contains an ornamental staircase of Colonial style, with spindle balusters and rail. The ceiling is crossed beamed, and is finished with a wooden cornice. The whole is painted white. The living-room is trimmed with quartered oak, and has a chair railing extending around the room, and forming a wainscoting, a beamed ceiling, wooden cornice, and an open fireplace built of red brick and furnished with red tiled hearth and facings. The dining-room is trimmed with cypress, and has a beamed ceiling and an open fireplace with red tiled hearth and facings, and a mantel. The whole trim is treated with ivory white. The kitchen and its dependencies are trimmed with cypress, and it is varnished in its natural state, and is furnished with all the best modern conveniences.

The second story is also trimmed with cypress, and is treated with ivory white paint, and contains three bedrooms, linen closet, maids' room, and a bathroom with paved floor, tiled wainscoting, and porcelain fixtures and exposed nickelplated plumbing. The third floor provides ample storage space. The cellar contains a laundry, furnace, fuel room, and other necessary conveniences. Cost, \$5,800 completed. Mr. Joy Wheeler Dow, architect, Wyoming, N. J.

RESIDENCE OF DR. J. ALLEN OSMAN, AT GLEN RIDGE, N. J.

THE engravings presented on page 76 illustrate the residence of Dr. J. Allen Osman, at Glen Ridge, N. J. The building is treated in the Colonial style. The underpinning is built of red brick laid in red mortar. The building above is of wood, and the exterior framework is covered with matched sheathing, good building paper, and clapboards; the latter, and also the trimmings, are painted white. The roof is covered with shingles and is stained a moss green. Dimensions: Front, 62 ft. 7 in.; side, 63 ft. 6 in., exclusive of piazza and porte-cochère. Height of ceilings: Cellar, 7 ft.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft.

The interior throughout is trimmed with white pine, and is treated with white paint. The hall has a massive wooden cornice, and openings between the living and dining-rooms provided with pilasters and columns with Ionic capitals. The staircase is an attractive one with square balusters and a mahogany rail, and it is well lighted by a cluster of leaded windows. The living-room has bookcases built in, paneled seats, and an open fireplace built of Roman brick, with the facings and a hearth of the same, and a mantel of Colonial design with a paneled overmantel.

The reception-room has a large bay window, and is separated from both the hall and dining-room by sliding doors. A short flight of stairs from the hall leads down to the den, which is beneath the staircase, and which is provided with an alcove for books, etc. A toilet is conveniently located off the main landing of the staircase. The dining-room is of large dimensions, and it has an open fireplace built of brick, with the facings and a hearth of the same, and a mantel of Colonial style. The floors in all the principal rooms are laid with quartered oak. The butler's pantry is fitted with drawers, dresser, bowl, cupboards, etc. The kitchen and laundry are trimmed with North Carolina pine, and the former has two dressers, sink, range, pot pantry, and the latter three Alberene tubs. The lobby is large enough to admit ice-box.

The second floor contains a large open hall with colonnaded effect, and paneled seats, six bedrooms, fourteen closets, one boudoir, and two bathrooms, the latter wainscoted and furnished with porcelain fixtures and exposed nickelplated plumbing. There are also on this floor two servant bedrooms, with a private stairway to the kitchen. The third floor contains ample storage room. Mr. Warrington G. Lawrence, architect, 111 Fifth Avenue, New York City, N. Y.

The best way to wash woodwork which has been painted is with a flannel cloth or a coarse cotton cloth dipped in lukewarm water, to which a small amount of ammonia has been added. Potash or "sal soda" and water are destructive to paint.



MODERN STABLE FITTINGS.

THE first step in the development of the modern stable, says the Evening Post, was the use of the small oblong, vitrified bricks, so long used in England. These have a glazed, non-absorbent surface, are almost as hard as iron, and well nigh impossible to chip, the edges of which are cut away for perfect drainage facilities, being rounded off so that a chipped brick or even a cracked brick in a stall is an extreme rarity. Being slightly roughed, the horse will not fall if he throws himself around, and each day a few pails of water can be thrown in, the stiff brush applied, and the entire surface made sweet and clean. A detail in the laying of these bricks is that every tier or row drains direct to a central inverted "T" grating, which runs about half way up the stall, and then direct into the cesspool, within striking distance, and which in turn either drains into an outer pool, or is emptied each day. A horse in such a stall has twenty per cent. placed on his value by appearance alone.

As a rule, the woodwork of the stalls is teak, with a two-inch dado; the wood extends upward about four feet, or as high as a horse might be expected to kick under ordinary conditions, and above that is stout iron railing, a novel feature being the immensely strong way in which the stall posts are sunk into the concrete, or screwed to the floor as necessary. This permits a telescope rod to be withdrawn from the interior of the stall wall proper, and extended to a rear wall or post. This rod being about three inches in diameter, and having a blanket hung over it, transforms the stall to all intents or purposes into a loose box for a sick or restive horse to which it is desired to give additional freedom of movement. Thus the posts, etc., have no base above ground, which is one of the features especially designed to keep the animal from hurting himself by accident.

The mangers, which are of metal, have unusually broad lips, with carefully rounded exteriors, the lips rendering it impossible for a horse to grasp such a breadth with his teeth, thus breaking up cribbing at the outset. The halter is fitted with a traveler, running along the head of the stall, so that when a horse moves around the halter goes with him.

The sides of the stall, being of wood, have drainage devices for any water which may be splashed at or against them and trickle down, so that there is constant dryness and absence of wet fermentation, and germ birth is discounted. The doors are fitted with neat devices, which necessitate the insertion of the finger and thumb to open, and so prevent the most clever horse from opening the door himself. The price of these stalls complete, with all improvements, ranges around \$500 for a loose box and \$250 for a stall.

There is a total revolution in the saddle and harness room. The old pegs on which anything was hung that was not thrown down give way to a series of space-economizing devices for saddle racks, and harness bosses for bridles, etc. The racks for interchangeable name letter are legion. An adjustable harness-cleaning table is at will a five-foot square table or, by folding up the side leaves, becomes an inverted "V" shaped saddle rack, with end drawers for polish, etc. This table, when used for washing, soap, etc., has special drainage features, which at once carry away surplus moisture.

These do not all run to extreme cost. That remains at the option of the purchaser to a large extent. As an example, it may be said that the new large stable of George Gould cost in the neighborhood of \$120,000 when completed with every modern accessory, and the stable of Clarence H. Mackay, recently built at Roslyn, N. Y., has probably cost considerably more than that figure.

All of this not only brings the stable up to date, but it also makes strongly for the health and welfare of the individual horse. Everything is clean and at its best. His constant surroundings are brought up to the higher civilization of the human being. It no longer is a case of "only an animal, used to nothing better." The value of the animal is understood, and tremendously enhanced. The attendant or attendants take a greater pride in having things just so. This becomes a desirable habit, and in the best establishments to-day, whether large or small, matters are run upon a highly civilized plan from which there will be no sliding back, but a still further steady advance toward all that is good.

BAR plates, in many instances, only retard the progress of horses; sometimes they seem necessary.

Legal Notes

SUBSTANTIAL PERFORMANCE—DEDUCTIONS.

WHERE a building contract was substantially performed, the referee, in a proceeding to foreclose a lien, was justified in making deductions for trivial omissions, and allowing a recovery for the balance. *Perry vs. Levenson et al.*, 81 N. Y. Supp. 586.

TIME FOR COMPLETION.

WHERE a contract for the construction of an annex to a building did not provide any time within which the work should be completed, and provided no penalty for delay, the contractor was bound only to finish the work within a reasonable time. *Krause et al. vs. Board of School Trustees of School Town of Crothersville*, 66 N. E. Rep. (Ind.) 1010.

WALL PAPER CONTRACT.

DEFENDANT contracted to paper certain rooms according to the following specifications: "Walls to be washed or sized with good, strong glue, as necessary to insure that paper will remain fast to the wall." The contract also provided that all work should be done in a good and workmanlike manner. Held not to bind defendant to so treat the walls as that the paper would remain fast, but only to adopt and use whichever of the two methods would, in fact, be most likely to insure the desired result. *Independent School Dist. of Centerville vs. Swearngin et al.*, 94 N. W. Rep. (Iowa) 206.

CARTAGE OF LUMBER.

A CLAIM for a mechanic's lien, stating the value of lumber, "including cartage thereof," is good. *Jones vs. Kruse et al.*, 72 Pac. Rep. (Cal.) 146.

DAMAGE FOR DELAY.

A STIPULATION in a building contract that the contractor should pay \$10 per day as liquidated damages for delay in completing the building within the specified time is not unreasonable, and will be upheld where it is shown that the rental value of the building was \$300 per month. *Ramlose vs. Dollman et al.*, 73 S. W. Rep. (Mo.) 917.

DEFENSE TO LI N.

WHERE specifications for a building contract required the contractor to allow \$300 for finishing hardware, and the hardware used amounted to \$574.02, of which the owner was credited with \$300, "allowance by contractor," the fact that the seller of the hardware filed a lien on the building for the balance, was no defense against the contractor's claim for final payment, on the ground that the contract provided that plaintiff should not be entitled to that payment until the owner was satisfied that no liens had been placed on the property. *Vanderhoof vs. Shell*, 72 Pac. Rep. (Or.) 126.

DELAY.—COMPUTATION INCLUDING SUNDAYS.

WHERE, under a building contract, the contractor was liable for a certain amount per day for each day after a certain date until the building was completed, he was not entitled to a deduction for Sundays after such date. *Vanderhoof vs. Shell*, 72 Pac. Rep. (Or.) 126.

DELAY IN COMPLETION—FAULT OF OWNER.

A FAILURE to complete a building within the time specified by the contract, which was caused by the owner's failure to comply with the requirements of the building department, which obtained an injunction and necessitated the stopping of work, and an alteration in the work previously done by the builder, and by the further neglect of the owner's architect to furnish sufficiently detailed plans, and also a desire of the owner that the builder should finish improvements on the seventh story before the sixth, so as to permit the continued use of the latter, and where the season during which the work was done was unusually wet, and the owner made no serious complaint about the delay, and acquiesced therein, did not bar a recovery under the contract. *Perry vs. Levenson et al.*, 81 N. Y. Supp. 586.

DELIVERY AND ACCEPTANCE.

WHERE, on completion of a building, the keys were delivered to the owner, who went into possession on the understanding that he accepted the building up to a list of alterations then agreed on, which were subsequently performed by the contractor to the satisfaction of the architect, such delivery of the building constituted an unequivocal acceptance of the work. *Vanderhoof vs. Shell*, 72 Pac. Rep. (Or.) 126.

RESIDENCE OF MRS. M. E. SMITH, AT PROSPECT PARK SOUTH, BROOKLYN, N. Y.

THE residence which is illustrated on page 73 has been built for Mrs. M. E. Smith by Dean Alvord, Esq., at Prospect Park South, Brooklyn, N. Y. The building is designed in the Colonial style, with paneled pilasters and Ionic capitals at the corner of the building. The underpinning and chimney are built of pressed brick, gray in color, while the superstructure, of wood, is covered on the exterior with beveled white pine clapboards, and the whole painted white. The blinds are painted a dark bronze green. The roof is covered with shingles, and is left to weather finish. Dimensions: Front, 41 ft.; side, 46 ft. 6 in., not including piazza. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft. 3 in.; second, 9 ft.; third, 8 ft.

The entrance is into a central hall, narrow in width, which extends back to the staircase hall, which is circular in form, and contains a quaint stairway extending up through the second and third floors, and the whole lighted in a most artistic manner by a dome overhead, glazed with stained glass. This hall, and also the staircase, is of whitewood treated with white enamel. The stairway has a mahogany rail. The parlor and library are trimmed with whitewood and are treated with white enamel; each is separated from the hall by a double arch, in the center of which there is a column supporting two springs of the arches, while pilasters against the partitions support the other springs of the arches. This treatment practically makes one room of the entire front of the house. The parlor has a hearth fitted with a mirror which rises to the ceiling. The walls are covered with a green fox paper, and is in harmony with the trim of the room. The library is provided with an open fireplace furnished with a tiled hearth and facings and a mantel, and on either side of which there are bookcases built in with leaded glass doors. The den is a convenient little apartment provided with a bookcase built in and a lavatory. The dining-room is trimmed with oak, and it has a high paneled wainscoting and a beamed ceiling. There is a breast provided with a heavy shelf, supported on corbel brackets, above which there are china cabinets built in. The buffet, built in, is of handsome design with leaded glass doors. The butler's pantry is fitted up with sink, drawers, dressers, etc. The kitchen is trimmed with ash, and is provided with a tiled floor and a white enamel tiled wainscoting, a large store pantry, dresser, range, sink, and a lobby large enough to admit ice-box. The rear hall contains a stairway to the second floor and a broom closet.

The entire second floor is trimmed with white pine, treated with white enamel paint. There are four bedrooms, all of which have doors with beveled plate glass mirrors set in the same; lavatory, and large well-fitted closets. The bathroom is tiled throughout—the floor, walls, and ceilings—and is furnished with porcelain fixtures and exposed nickelplated plumbing. Two of the bedrooms have open fireplaces, with tiled facings and hearth and mantel. There are a billiard-room, two bedrooms, bathroom, and a trunk room on the third floor. The first story has parquet floors, while the second story has floors laid with oak. A cellar under the entire house, cemented, contains a laundry, storeroom, furnace room, and fuel room. Mr. John J. Petit, architect, 11 East Thirty-third Street, New York.

THE CLOSED HOUSE.

WHEN a city house, says a recent writer, is shut for a long time every window from top to bottom is closed and the water supply is turned off. There is bound to be some water left in the pipes, which, by remaining there all summer, is certain to become foul. Some careful householders see to it that after the water is turned off a plumber shall go through the house and pour into every trap a solution of glycerine and oil to stop these gases from meandering into the various rooms, but more often this precaution is not taken.

Even in the most modern city house a cellar deprived of a free current of fresh air is certain to become damp and to exhale malarious breaths to the uppermost part of the dwelling. Any one who has entered a long-closed city house, even on a hot day, knows that it felt damp and radiated shivers, but few comprehend that under such circumstances the imposing mansion, with its network of plumbing, is far more dangerous than the most decrepit country house, guiltless of anything resembling modern improvements.

These and all other problems appertaining to the opening of a city house are now loaded upon the shoulders of a professional house opener.

A DISCONNECTING trap makes the ventilation of the sewers a greater necessity than if the sewer air were allowed to circulate through the house drains, but the municipal engineer can better regulate the air of the sewers if all householders' openings are trapped.

Decoration

THE DECORATION OF CEILINGS.

AN authority upon the subject of interior decoration has expressed the opinion that if only one part of a room be decorated, that part should be the ceiling. He says: "Nothing appears to me more strange than that our ceilings, which can be properly seen, are often white, while the walls, which are always in part hidden, and even the floor on which we tread, should have color and pattern applied to them; and of this I am certain, that, considered from a decorative point of view, our ordinary treatment is wrong."

If a ceiling be quite flat and without raised moldings or ornaments, all decorations placed upon it must be flat also, and must not represent fictitious relief, for no shaded ornament can be satisfactory when placed as the decoration of a flat architectural surface.

Many circumstances tend to determine the nature of the decoration to be applied to a ceiling; thus, if a ceiling be structurally divided into square panels, the character of the ornament is thereby restricted, and should these panels be large it would probably be desirable that each be filled with similar ornamentation; while if they are small, three or four different patterns may be employed, if arranged in some orderly or regular manner.

On the Continent, and to some extent in this country, ceilings have been painted with large pictures, covering the whole or a portion of the surface; but this is quite a wrong method, for a picture of such a kind could only be seen the right way up, from one point in the room; from all others it would be viewed upside down, or from one side or corner.

But, apart from this, a ceiling being flat surface, all decoration upon it should be flat also. In many of the French ceilings the picture is painted in such a position as to be seen properly only by a person standing with his back to the fire.

The Egyptians decorated their ceilings, so did the Greeks, the Byzantines, the Moors, and the peoples of the Middle Ages, and the ceilings were by no means always of a light color. It is remarkable that so few of our public buildings contain rooms with well decorated ceilings, but there have been more executed during the last few years, and there appears to be a tendency for their adoption in connection with modern buildings.

MODERN DOMESTIC ART.

THERE is not a wealthy home to-day where it would not be possible to deliver a lecture on the different methods of furnishing houses, which have been in vogue throughout all ages, remarks Richard Cantinelli in the *Revue Bleue*. From the Gothic antechamber to the art nouveau boudoir, from the Louis XV. chamber to the Louis XVI. salon, the Empire work-room, and the Henry II. dining-room we have an incoherent résumé of all epochs and all styles. If this scheme of furnishing charms some idle woman, at the same time it may displease the man of business, who is too much occupied with current affairs to have time to accustom himself to the pleasures of archeology, and who can not move with comfort among objects which are not adapted to his habits and to his ideas. Should not the chief care of our artists be to find a frame for the active life, an approximate dwelling-place for the average man of to-day?

It seems that while the efforts made in this direction have been numerous and persevering, our epoch is powerless to invent not only a new domestic architecture but even a simple ornament which distinguishes the different styles, as, for example, the foliage of the Renaissance, the shell and the ribbon of the eighteenth century. Our cabinetmakers have taken for canon the unformed and asymmetric, and our great-grandchildren will note with surprise, when they study our ornamental art, that it was less spontaneous and less rich in proportion than the art of the Aztecs or that of the Incas. The very sense of interior decoration grows less each day. The traditions of taste and proportion, well developed up to the time of the Revolution, are to-day almost entirely lost. Formerly the architect and the decorator thought of the decoration of a house as a homogeneous whole. Once there existed an art of furnishing, but to-day we only have furniture manufactories.

In our day the problem of furnishing is thus presented: Given several rooms, to place in them the most beautiful furniture possible, having care to discard all creations of the modern style. It takes no time to see how little there remains in this new conception, of the true tradition, which commanded that all, from the ground floor to the weathercock, should be imprinted with the mark of contemporary art.

THE LONDON TOWN HOUSE: OLD AND NEW.*

STARTING from Wren and the impetus given to the development of the town house by the Great Fire of 1666, it may be noted that from that time to the middle of the eighteenth century there does not appear to have been any radical change in the type of plans adopted for the various classes of houses. By "classes" is meant the small sized town house, the middle sized (both in terraces), and the town mansion.

Of the first and second type there are few examples extant earlier than the eighteenth century, and of the mansions also, owing to the numerous alterations which have taken place, not many remain as first designed. But, dating from the middle of the eighteenth century, there are innumerable examples of these types.

It appears to have been the rule to have spent whatever time and thought was given to the planning of houses, until quite recent times, to the ground and first floors. It was all for "my lord and my lady," and let the serving men and women shift for themselves. The reception-rooms having been planned, the bedrooms and children's and servants' apartments had but little attention bestowed upon them, and were more often than not badly lighted, badly arranged, and, to use a paradox, low in height.

No special scheme of house building appears to have been laid down prior to Wren's time, and his plan for rebuilding London after the Fire was not carried out according to his ideas. Yet he and Hooke, who had also made a plan, and who, owing to their appreciation of it, had been appointed Surveyor to the City by the Corporation, we are informed, were much overworked in setting out the rebuilding schemes. In 1668 Pepys describes a fire in Minchinlane—a detached house "not yet quite finished, and the benefit of brick was well seen, for it burnt all inward and fell down within itself, so no fear of doing more hurt." Apparently, also, the jerry builder was to the fore in the rebuilding, as our friend Pepys tells us: "I hear (1668) that there is fallen down a new house, not quite finished, in Lumber-street, and that there have been several so, they making use of bad mortar and bricks."

From this time almost to the end of the seventeenth century no building schemes of any note can now be followed with advantage, so many alterations having taken place.

Wren must have had so much to do, in his official capacity, upon St. Paul's and in designing sixty city churches, with a few other trifles, that we can scarcely trace his influence or that of any other architect in the ordinary terrace-house plan, although the traditions of his school of work can be seen in numerous instances. It is on record that he built a mansion for himself in Great Russell Street, but Elmes states that in 1823 "its noble front with majestic cantilever cornice was taken down by a speculating builder and common Act of Parliament fronts run up for four houses in its stead."

In the eighteenth century a vast quantity of houses were erected in London, and most of the principal residential squares and streets were laid out or rebuilt, with the exception of portions of Belgravia and practically the whole of South Kensington, this being nineteenth century work. Devonshire Square, city, was laid out between 1620 to 1670, but rebuilt later. Finsbury Square was laid out by the younger Dance in 1777, and was the first public place in London lighted by gas. Finsbury Circus was built in 1814; its glories have departed, and huge blocks of offices have taken the place of most of the fine old terrace houses. Bloomsbury Square was laid out in the seventeenth century, but rebuilt during the eighteenth and nineteenth centuries. Grosvenor Square, although laid out in 1695, by Kent, has been rebuilt to a great extent, and was "the last square lighted by gas." Cavendish Square was commenced in 1717 and 1718, but building was then checked by the bursting of the South Sea Bubble, and this square remained in an unfinished state for many years. James of Greenwich was the architect of the two fine houses still in existence on the north side, which are excellent examples of Wren's school.

The Brothers Adam built the Adelphi in 1768, some houses in Mansfield Street in 1768, a mansion in St. James' Square in 1772, and one in Grosvenor Square in 1773, Portland Place in 1778, a terrace of houses in Fitzroy Square in 1790-1794, and as these are stone-fronted they appear to have seen that their favorite "stucco" was not all that could be desired.

Portman Square was begun in 1764, but was not finished until twenty years afterward, and was then described as "on the outskirts of the town, approached on one side by a road, unlit, unpaved, and inaccessible by carriages."

This brief list of dates gives up a rough outline of the history of the laying out of some of the principal squares and terraces of houses built during the eighteenth century.

It is a matter for reflection to trace in the evolution

of town houses how the trend of fashion has moved westward—and here it may be interesting to note that in most towns the fashionable quarters are in the west, and "fashion" for centuries past in London has ever moved westward.

We are told that "the first emigration of the London merchants (who used to live over their shops) westward was about the middle of the eighteenth century, and only those who had secured large fortunes and possessed reputations beyond the shadow of a doubt ventured as far as Hatton Garden."

We may now consider the work done in the nineteenth century to meet this westward movement, and soon discover that the speculator was again to the fore.

Regent Street and Regent's Park were laid out by John Nash from about 1812 to 1820.

Belgrave Square was built in 1825 from designs by George Basevi, and Eaton Square by Cubitt in 1827—"Cubitt built" being (long afterward) a sufficient guarantee for well built houses. This term is used advisedly, as, alas! there is much to be deplored architecturally.

From that date to the work done upon the Grosvenor, Cadogan, and Queen's Gate Estates (dating from about 1880), there is not much to interest us.

A very large amount of rebuilding has taken place upon these estates during the past twenty years, and fortunately a great deal of it has been done by some of our leading men, and here can be seen the work which must go down to future generations as some of the best town house work done during the latter part of the nineteenth century.

There is a considerable variety in the plans and elevations, and the development shows the reaction from the Portland Place and Harley Street terrace type. There is, no doubt, much that is charming in some of the new work done upon these estates, but whether the endless variety and "inconsequence" of many of the designs has not been produced at too great a sacrifice of dignity is a very moot question. This restlessness seems to be characteristic of the age, and it is interesting to speculate as to what would now be done in the designing of a row of terrace houses or a good "square," say by Mr. Norman Shaw, judging from the gradual development of his work from "Craigside," with its infinite variety and charm, and the dignity and reserve shown in his final masterpiece "Chesters."

In the corner house in Queen's Gate, also by Mr. Norman Shaw—although we are told he was given a cue as to what was desired by the owner, yet it is well worth noting that after a long series of buildings thoroughly English in feeling, yet entirely fresh in grouping, and with detail all his own—we find him at the close of his professional career reverting to severer forms and detail, allowing scale and proportion to take the place of picturesqueness, and really going back to the time when English architecture ceased to be a living style—viz., the early Georges.

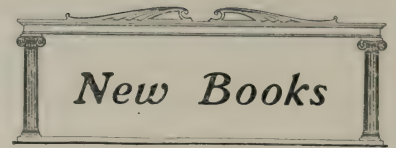
Until that time there had been a gradual development, a real following-on of design, and adapted to the requirements of the age. Since that time we have been ringing the changes on the Greek revival, the Gothic revival, and, latterly, rushing to the Continent and coming back with the sketch books filled with innumerable "bits" to be grafted on to the next new work. But it is most interesting to see (as is apparent in so much that has been done during the past ten years) that the tendency is to return to our vernacular; to pick up the threads and to carry on the traditions of our own work, and surely it is worth while that our students should pause and study this reaction before struggling to invent new forms. By the way, does this not often mean amorphous lumps of brick and stone with conventional orange trees growing over the fronts of buildings and bearing fruit in the most extraordinary manner?

These thoughts take us back to the works of the Brothers Adam, who, while adopting the characteristics of the vernacular style, impressed an individuality and refinement of detail on their work which does not appear to have been attained by any architect since.

Examine the illustrations of their work and the skill in the "design" of their plans, the symmetry, proportion, and refinement of detail in their decorations, and remember that they could and did treat their decorations architecturally; each reception-room, hall, and staircase being separately studied and treated—walls, ceilings, floors, chimney-pieces, windows, doors, and even the window and door fittings and the furniture were designed in the same style and scale as the house, and with the same delicacy of detail.

The fenestration in the work of the Brothers Adam was designed to show the relative importance of the rooms, but (with the exception of the drawing-room floor) the windows in many cases were too small to properly light and ventilate the rooms; it is curious they failed to realize the great defect which a center pier between two windows produced as regards the effective lighting of a long room end on to the front.

(To be concluded.)



MODERN CIVIC ART.

MODERN CIVIC ART; OR, THE CITY MADE BEAUTIFUL. By Charles Mulford Robinson. London and New York: G. P. Putnam's Sons. 1903. Pp. 381. Price, \$2.50 net.

There can be nothing more delightful than to imagine how a great modern city might be built unless it is to write a book on the same alluring theme. To build a city is a vast undertaking and calls for unlimited money; it is exactly one of those themes in which the modern architect, whose fees depend on the amount of money expended, takes an especial joy. Theory, moreover, has some attractions which stern reality has not, and hence the city maker, who approaches his problem from the standpoint of ultimate beauty, has set for himself a task of limitless joy, in which he can imagine all sorts of delightful situations, and in which he can arrange streets and buildings with that supreme indifference to business considerations which is supposedly one of the characteristics of an artist.

Mr. Robinson is neither an architect nor a rash iconoclast, and yet his whole book is a plea for the re-making of our cities on the idea beautiful. It is a fascinating theme, this, and Mr. Robinson presents his subject with much grace of diction. It is a pity, however, that his publishers should have permitted the appearance of paragraphs anent this book in which the author is spoken of as "an American Ruskin." The comparison is not only wholly uncalled for, but the reader who advances as far in this book as page 296 will find there some references to the Piazza San Marco in Venice which at once places their writer outside the pale of Ruskin disciples.

The book is divided into five sections. A brief introduction, which includes a chapter on "What Civic Art is," is followed by others on "The City's Focal Points," "In the Business District," "In the Residential Sections," and "The City at Large." Civic art is regarded, and rightly regarded, as the last stage in city making. This is true enough, and yet, with but two or three exceptions, the most beautiful cities in the world are those whose beauty is natural or which was acquired in a spontaneous way without thought of art commissions, radial streets, limitations to heights of buildings, or the other matters which the modern doctors of city making regard as their stock in trade. Yet Mr. Robinson is not far wrong when he says that "civic art properly stands for more than beauty in the city. It represents a moral, intellectual and administrative progress as surely as it does the purely physical. It stands for conscientious officials of public spirit, and where the officials are elective it is evidence of an aroused and intelligent populace."

This is very good doctrine, and while it is distinctively true that the better made and the better looking our cities are, the better they will be from a sociological standpoint, it is by no means certain that the art city will be everything its admirers and promoters think and hope it will be. Certainly artists, as artists, have done nothing at all by which wise men will feel constrained to trust the management of public affairs to them, and while their advice seems desirable at the present stage of the discussion of the problem, there is no reason to suppose that a city millennium will ensue if public affairs are modeled after their ideas.

The facts of the case are that the artist and the non-artist each go too far, each fail to understand the position of the other, each refuses to recognize the limits that the other has. Mr. Robinson's book leans heavily on the side of the artist, and hence is without the practical value that it would have had had a broader point of view been taken. More beauty and more public art is one of the great needs of every American city; but it will come gradually, and not by beginning at the city plan, remaking and rebuilding wherever art proclaims the necessity, and starting afresh amidst the high values and costly structures of crowded districts. Yet the author of this book means well; he is thoroughly convinced of the honesty and necessity of his purpose; is sure the results he foresees will be obtained, and presents his arguments engagingly. He does not ignore practical questions, although his book is not a practical handbook. But it is one that touches on many interesting points, and it is an admirable volume to commend to the peaceful perusal of every high city official in every city and town of our land.

The name of the publisher of "The Flower Garden," noted in the September number of the BUILDING MONTHLY, was incorrectly given. The book was published by McClure, Phillips & Co.

* Condensed from a lecture before the Architectural Association of London for the BUILDING MONTHLY.

MR. KARL BITTER ON THE SCULPTURE FOR THE ST. LOUIS EXPOSITION.

(Concluded from page 69.)

Herbert Adams, and others. Portrait statues include historic characters connected with the region. In addition, there will be much allegorical and decorative sculpture.

"The most satisfactory fact in connection with all this work—and the quantity of sculpture that will be used at St. Louis will be far in excess of that employed at Chicago—is the quality of the work done by the younger men, many of whom have not before executed works of any importance. The sculpture at St. Louis will not only include examples of work from all our better known sculptors, but it will be particularly notable in bringing to the front many men whose work is almost practically unknown. These men have chiefly found work heretofore as assistants to older sculptors, but the quality of their workmanship has, in many instances, risen to an unusual height. This, to me, is very much more important than the quantity of the sculpture. It means not only work for sculptors, but, which is much more important, it means bringing out new men and giving them adequate opportunities. This is the great significance of the sculpture of the exhibition, although it is not yet known or appreciated by the public."

"But how do you get all this done?" I interrupted. "The method of work involves many interesting problems. The sculptors and subjects were first selected, and the selection approved by an advisory committee composed of John Q. A. Ward, Daniel C. French, and Augustus St. Gaudens. The sculptors then prepared small models or sketches of their designs, which were approved by this committee. The model is then enlarged by workmen in the workshop, and the sculptor finishes or superintends the job. All of the work is done here, the figures and groups being sawed apart or completed in sections. It was utterly impracticable to do the work in St. Louis; New York is the center of sculpture in the United States. Our ablest sculptors reside in this city, and capable assistants and workmen can be found here in numbers sufficient to permit the undertaking to be carried out in good season and in an excellent manner."

"In point of money, we will have less to spend at St. Louis than was spent at Chicago, but we will have very much more sculpture. Our appropriation is \$500,000, while \$800,000 was spent at Chicago. The difference has been made up of economies of production here. At Chicago much of the work was done in that city by the sculptors, many of whom had to engage studios for preparing it, and, in consequence, had to be highly compensated. We have a very different system, the chief dependence being placed on the pointing machines for enlarging the models, a machine invented by Mr. Robert T. Paine, and used in reproducing the sculpture for Buffalo, and now used for St. Louis on a large scale. This machine permits the use of unskilled labor for the mechanical work of reproduction, and is not only rapid but absolutely accurate."

And then presently we journeyed forth down a fine boulevard to a disused roundhouse on a railroad. A more unlikely spot for the production of works of art it would be hard to imagine, but a more thoroughly practical place it would be difficult to conceive. The surroundings were not, it is true, inviting or artistic, but neither of these things were drawbacks to the use of the building, which was large and high, well lighted, and with railroad tracks for the shipment of sculpture coming right to the very doors.

A wonderful place it was, filled with groups, models, half completed work, and others just begun. Some of the statues were in halves; many were strangely incomplete, but even the most grotesque shadowed forth the form they were ultimately to take. I am free to say I wandered through this delightful place with mouth agape, so strange it was, so fine many of the figures, so impressive this insight into the practical making of decorative sculpture. Every stage of procedure was illustrated many times, and it was quite easy to see how the final results were obtained.

A great row of pointing machines was ranged against the far wall of the building. First came the wooden framework on which the statue was built up. This made, the second stage was a layer of excelsior and plaster. Then the foreman indicates points on the original model and drives nails into the excelsior and plaster at corresponding points. Finally comes the outer layer of cement, a new composition not heretofore used, but possessed, so Mr. Bitter told me, of fine qualities of endurance, and so workable that a distinct economy in its use was obtained.

One could spend many hours in this great studio—for such it is—but I felt I could not detain Mr. Bitter too long from his personal labors in his own studio. I left with a profound impression of the importance of the work he was doing, with a new impression of the resources of American sculpture, and an enlarged vision of the artistic beauties the Louisiana Purchase Exposition will have in store for its mil-

lions of visitors when they find their way to St. Louis next year. It was raining hard when we left the roundhouse, but the thorough wetting did not dampen my enthusiasm for this splendid effort.

RESIDENCE OF ALBERT J. DRAYTON, ESQ., JERSEY CITY, N. J.

The residence of Albert J. Drayton, Esq., which is illustrated on pages 78, 79, and 81, has been erected on Gifford Avenue, Jersey City, N. J. The building is designed in the pure Colonial style, with good detail. The underpinning and chimneys are constructed of buff brick. The remainder of the building is of wood, and the exterior framework is covered with matched sheathing, good building paper, and clapboards, the latter painted a dark green, while the columns, pilasters, and trimmings are painted a cream white, which, combined with a silver gray shingled roof, present a harmonious and artistic effect. The exterior detail is in high relief, and very elaborate, and is well brought out by the very fine color scheme. Dimensions: Front, 61 ft. 6 in.; side, 30 ft., with an extension of 15 ft. x 16 ft. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 9 ft. 6 in.; second, 9 ft.; third, 8 ft. 6 in.

The interior is treated in a similar style to the exterior, and shows much fine detail. The hall is a central one, and is trimmed with white pine, treated with white enamel. The stair rail and doors are of San Domingo mahogany. The stair arrangement is very effective, for upon entering one sees the great arch springing across the hall, beyond which there are three smaller arches forming an arcade, which is supported on fluted columns with Ionic capitals. The staircase behind this group ascends in five short flights with broad landings, and the whole is lighted effectively by a broad staircase window. The square reception room is in white enamel, with a small wainscot, of Colonial style, to the height of the window sills, and an ornamental plaster ceiling.

The library is trimmed with quartered oak, stained and finished in a dark Flemish brown. There are bookcases built in, over which there are windows glazed with delicate tinted glass. The fireplace is faced with Mexican onyx, with a hearth of the same, and a mantel of handsome design with fluted pilaster effect, with Ionic caps, and an ornamental overmantel. The dining-room is trimmed with quartered oak, and has a paneled wainscoting and a beamed ceiling. The fireplace is furnished with Mexican onyx facings and hearth, and a mantel with carved brackets and paneled overmantel. The pantry is fitted up in the usual way, with drawers, dressers, and cupboards. The kitchen, with its enameled brick range hearth, combination coal and gas range, good light and cross ventilation, makes it all that could be desired. The rear stairway is conveniently located.

The second floor contains four bedrooms, with two lavatories opening from the principal rooms, linen closet, sewing room, large hanging closets, and a bathroom furnished with a tiled wainscoting and a paved floor, porcelain fixtures, and exposed nickel-plated plumbing.

There are a billiard-room, nursery, trunk room, and servant quarters on the third floor. The billiard-room has walls covered with red burlap and a ceiling of undressed wood, with exposed beams, which are stained a dark green. The house is heated by a hot air furnace, which is located in the cellar, and each room is separately ventilated by the Miller return air system to the furnace. This cellar also contains a laundry, fuel room, cold storage, etc. Mr. Charles Henry Detwiller, architect, Mr. A. L. C. Marsh, associate, 99 Nassau Street, New York.

MOTH BALLS.

Moth balls, says Medical Talk for the Home, constitute one of the crowning products of cracked-brain contrivances. Round, smooth, white, candy-looking balls, about as big as the brain of the one who conceived them. Warranted to saturate a trunk full of clothes so thoroughly with stench that a person of any sensibility would much rather go and buy a new suit of clothes than to undertake ever to renovate the old ones.

There is a tradition that moth balls will protect woolen clothing from the ravages of moths. This tradition has no foundation whatever, except the lunacy that a stench drives away parasites of all kind.

If any woman wants to demonstrate the fallacy of moth balls, let her take some of the sweet-smelling spheres, put them with some woolen rags and leave them in some outhouse or chamber, into which the moth can enter. Wait a month or two, then visit the place to observe the nice litter of moth worms which has collected. It is, perhaps, too much to say that moth balls attract the miller. Even moth-millers do not like them. There is no creature on earth that does like them. There is but one creature on earth that will tolerate them, and that creature is a woman.



The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

MACHINE FOR MOLDING CONCRETE BLOCKS.	G. Brady, Jackson, Mich. August 4	735,061
IMITATION TILE.	W. N. Cornell, Starlake, N. Y. August 4	735,344
TILING.	A. A. Spadone, New York, N. Y. August 4	36,482
BUILDING BLOCK.	H. E. Goodwin, Indianapolis, Ind. August 11	735,870
ROOFING TILE AND ROOF.	J. Veen, Roanoke, Ill. August 18	736,901

CARPENTRY.

FLOORING, TABLE TOP, ETC.	S. C. Fisher, Butler, Pa. August 4	735,079
WEATHER STRIP.	W. A. Scott, Evansville, Ind. August 11	735,913
WINDOW.	J. H. McIlroy, Chicago, Ill. August 11	735,999
WEATHER STRIP FOR DOORS.	C. E. Meeker, Ann Arbor, Mich. August 11	736,286
WEATHER STRIP.	J. W. Henry, Crawfordville, Ind. August 18	736,392
WINDOW SILL.	C. L. Edmonds, Clarksburg, W. Va. August 18	736,588
STORE FRONT SASH.	J. B. Phelps, Mendota, Ill. August 18	736,774
WINDOW SASH.	G. W. Richardson, Sparta, Wis. August 25	737,144
WINDOW.	C. Vose, Brooklyn, N. Y. August 25	737,534

CONSTRUCTION.

MOLD FOR CONCRETE WALLS.	A. S. Cramer, Coopersville, Mich. August 4	735,214
COMPOSITE STRUCTURE.	J. O. Ellinger, Philadelphia, Pa. August 4	735,228
SHEET PILING.	L. P. Friedstedt, Chicago, Ill. August 4	735,489
METAL CEILING OR WALL PLATE.	L. L. Sagedorph, Philadelphia, Pa. August 4	735,679
WINDOW PLATFORM.	W. S. Sherwood, Macon, Ga. August 11	735,915
LATTICE OR TRUSS GIRDER.	T. Visintine, Zurich, Switzerland. August 18	735,920
HANGER FOR TEMPORARY CENTERING.	C. B. Waite, New York, N. Y. August 11	736,040
CONSTRUCTION OF HOSPITALS, SANITARIUMS, AND OTHER BUILDINGS.	D. Sarason, Berlin, Germany. August 11	736,158
FLOOR CONSTRUCTION.	J. Trunzer, Pittsburg, Pa. August 11	736,316
WALL CONSTRUCTION.	W. H. Fisher, Kansas City, Mo. August 18	736,375
CONCRETE AND METAL CONSTRUCTION.	J. Kahn, Detroit, Mich. August 18	736,602
GLAZED STRUCTURE.	W. V. Hickerson, Jersey City, N. J. August 25	736,968
ADJUSTABLE JOIST FOR SUPPORTING FIREPROOF FLOORS.	T. O'Brien, Pittsburg, Pa. August 25	737,133

ELEVATORS.

ELEVATOR DOOR.	H. Bitner, Berwyn, Ill. August 4	735,055
SAFETY GATE.	C. E. Simpson, Chicago, Ill. August 4	735,306
SAFETY STOP FOR ELEVATORS.	N. O. Lindstrom, New York, N. Y. August 4	735,395
AUTOMATIC ELEVATOR.	W. H. Hultgren, Philadelphia, Pa. August 25	737,108
SAFETY DEVICE FOR ELEVATORS.	W. G. Miller, Cambridge, Mass. August 25	737,440

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIREPROOF COMPOUND.	G. O. Rosenleaf, Muscatine, Iowa. August 4	735,155
FIRE SHUTTER-RELEASING MECHANISM.	P. Ebner, Columbus, Ohio. August 11	735,227
FIREPROOF STRUCTURE.	C. S. Bird, East Walpole, Mass. August 4	735,335
FIRE PROTECTIVE DOOR.	J. B. Fisher, Paterson, N. J. August 18	736,711
PROCESS OF FIREPROOFING WOOD.	A. M. Pierce, Brooklyn, N. Y. August 25	737,468

HARDWARE.

BUGLAR ALARM AND SASH LOCK.	L. H. Handy, San Francisco, Cal. August 11	735,872
LOCKING ATTACHMENT FOR DOORS.	W. H. Gartz, Berdardsville, N. J. August 11	735,962
KNOB.	C. O. Noce, Stamford, Conn. August 11	736,290
WINDOW SASH LOCK.	Edw. O'Neill, Milwaukee, Wis. August 11	736,335
SASH FASTENER.	E. H. Baker, Whitebird, Idaho. August 18	736,474
SASH FASTENER.	C. F. Stone, Lebanon, Mo. August 25	737,039
SASH ROD.	T. C. Richards, Winsted, Conn. August 25	737,142
SASH LOCK.	J. H. Clements, Copetas Cove, Texas. August 25	737,351
LOCK.	T. H. Rea, Cambridge, Ohio. August 25	737,479

HEATING AND VENTILATION.

CHIMNEY TOP AND VENTILATOR.	J. F. Le Beau, Toledo, Ohio. August 18	736,748
RADIATOR.	E. V. Seeler, Philadelphia, Pa. August 18	736,807
RADIATOR.	C. D. Sanborn, Detroit, Mich. August 25	737,494
VENTILATOR FOR LEADER PIPES.	G. M. Vroomer, New York, N. Y. August 25	737,535

MISCELLANEOUS.

PAINT COMPOUND.	J. F. Smith, Chicago, Ill. August 4	735,004
REFLECTING PANEL.	F. L. O. Wadsworth, Williams Bay, Wis. August 25	737,178

PLUMBING.

FLUSHING TANK FOR WATER CLOSETS.	W. W. Griffiths, Philadelphia, Pa. August 11	736,516
WATER TRAP FOR WASTE PIPES.	P. B. Chaffin, Fairhaven, Wash. August 18	736,688

TOOLS.

PLANE.	C. H. Fox, New Britain, Conn. August 11	735,744
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Publishers' Department

HEATING APPARATUS.

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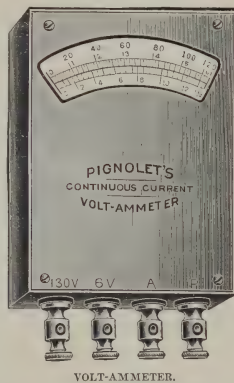
STEEL ROLLING DOORS AND SHUTTERS.

ALL classes of buildings that need safe, quick, and easily handled doors, shutters, and partitions of metal construction can be readily outfitted by the Kinneer Manufacturing Company, of Columbus, Ohio. From recent information in connection with the steel rolling doors and shutters industry, we find that this firm has been increasing its important output to the extent that it has now established main offices in three, and agencies in eleven, of the principal cities of the United States, and ten agencies abroad, the latter as widely separated as are London and Melbourne; it is manufacturing under thirty patents, and others pending; and with the desire of maintaining the high standard of excellence, many of its constructions have been largely improved by features which, for the purposes they are intended, materially enhance their value. Catalogue L, recently issued by the Kinneer Company, gives a thorough technical description of many of its constructions, and each is fully illustrated in elevations, vertical sections, cross sections, grooves, hoists, posts, gears, end views, etc.; and to show how fully the detail of at least one construction is given, we note at random a page which contains five drawings that furnish an exposition of the making of a door or shutter designed especially for fire protection and equipped with an automatic closing device operating at a temperature of about 150 degrees. The compound levers that release the curtain are so arranged that they are positive in their action, and respond immediately to the separating of the fusible link suspended in the center of the opening. The tension springs are attached to the bottom of the shutter to give the shutter the initial start. On openings of excessive size, bevel gear and crank supplied for recoiling the curtain are shown. In a very fine presentation of an extensive tram car-shed, Wallasey, England, the car-house doors are shown in graduated positions, from one opening completely closed to the end opening on the right, which is entirely clear. To admit of plenty of clearance for the double-deck tram cars, the doors are twenty-two feet high. These doors are operated from the exterior of the building and the position of the trolley wire connections is fully shown. The handsome front of the very large tram shed of the corporation tramways, Nottingham, England, is provided with fifteen Kinneer doors. Differing from those described in the preceding item, these doors are placed on the interior of the building, and also operated from the inside. The car-house of the Albany Railway Company, Albany, N. Y., is illustrated with an engraving which shows the application of regular construction

of car-house doors for an exceptionally fine car-house front, and it will be noted that the appearance of the doors enhances rather than detracts from the appearance of the building. Another illustration shows a door partly down, and it will be noticed that the operation of the door does not in the least interfere with the trolley wire. Where desired, the Kinneer car-house doors can be so arranged that they will, in a measure, open automatically; that is, when the operator opens the door to a height of say six or eight feet, the door will open the balance of the distance automatically, thus assuring ease and speed of operation, and reducing possibilities of damages to a minimum. An interesting picture is shown of a roundhouse at Cresson, Pa. The motive power department of the Pennsylvania Railway Company states that the steel rolling doors recently erected at this place for the roundhouse give entire satisfaction, and that they are the best doors for roundhouse and shop purposes, as they are easily operated by one man, and can be raised or lowered in less than fifteen seconds. They state that the doors are a decided improvement over the old style of wooden doors, as in severe weather at Cresson they were compelled to use from three to four men to open and close them. To show that all classes of buildings are using these improvements we mention two examples. A number of interior openings in the Art Institute Building, Chicago, are equipped with rolling doors, and the artistic effect is in harmony with the surroundings; and an imposing business block in Guadalajara, Mexico, has the shutters applied on the outside. These are built in the transom bar, if the construction so requires, and can be arranged to operate from the interior. The Kinneer Manufacturing Company has offices in Boston, Philadelphia, and Chicago.

VOLTMETERS, AMMETERS, AND VOLT-AMMETERS.

CONTINUOUS current voltmeters, ammeters, and volt-ammeters manufactured by Louis M. Pignolet are sufficiently large to be perfectly reliable, and small enough to be easily carried in a person's pocket. The accompanying engraving of a volt-ammeter is about one-third the size of the actual instrument, which is



5 x 3 1/2 inches. All these continuous current meters are of the same size, are of the permanent magnet type, are very dead beat; each is calibrated individually for horizontal position and its scale is made by hand. An attached mirror is provided to secure perfect readings. The magnets are constructed of special steel from one of the best foreign makers, and are carefully treated to insure permanency. These portable and compact instruments are made in a thorough manner with jewel bearings and carefully ground and hardened steel pivots, and the purpose to make them extremely durable and reliable has been accomplished. The volt-ammeters are furnished in various combinations, and have a very wide range of usefulness, being adapted not only to testing batteries, but to a large variety of tests and measurements and to locating faults in telephone, electric light, annunciator, and other circuits, for each instrument can be used either as a voltmeter or as an ammeter. By the dead beat attachment (operated by turning a button on the cover of the instrument) the pointer is set a little below the reading to be made, so that it has but a short distance to move when the current is turned on. The pointers come quickly to rest, so that ordinarily the attachment is not required. It is advantageous where many similar measurements are to be made, as in testing a number of storage cells. These instruments embody improvements fully protected by patents, and are well and carefully made. Pignolet's special voltmeters and volt-ammeters for resistance are so adjusted that each division of the voltmeter scale is equal also to .001 ampere (one mil-ampere), and the voltmeter resistances are as follows: 0 to 3 volts, 100 ohms; 0 to 25 volts, 500 ohms; 0 to 50 volts, 1,000 ohms; 0 to 100 volts, 2,000 ohms. This permits resistance to be determined by Ohm's law that the resistance of a cir-

cuit equals the volts divided by the amperes. To apply this with the instrument, first measure the volts of the battery used for the test, then ascertain the amperes (mil-amperes) with the unknown resistance in circuit with the battery and voltmeter. Divide the volts by the amperes (which gives the resistance of the circuit, including that of the voltmeter), subtract the resistance of the voltmeter, and the remainder is the unknown resistance. For example: Suppose the battery to have 4.5 volts, the voltmeter to read 0 to 5 volts and the amperes to be .020 (20 mil-amperes) indicated by a deflection of the pointer of twenty divisions of the voltmeter scale, when the unknown resistance is connected in series with the voltmeter and battery. Then the resistance equals 4.5 divided by .020 less 100 ohms (the resistance of the voltmeter). Answer, 125 ohms. If the battery had 45 volts and the voltmeter read from 0 to 50 volts and the amperes were .020, as before, when the unknown resistance was connected in a series with the voltmeter and battery, then the resistance would be 45 divided by .020 less 1,000 ohms (the resistance of the voltmeter), which gives 1,250 ohms as answer. In volt-ammeters with this adjustment for resistance, the ammeter part of the instrument is not used for resistance measurements. Connect the unknown resistance in series with the voltmeter and battery and never in series with the ammeter and battery. When many measurements are to be made with the same battery, time will be saved by making a table giving the resistance for each division of the voltmeter scale. This adjustment can be applied to any of Pignolet's voltmeters and volt-ammeters not reading above 100 volts. Use preferably a battery of low internal resistance, such as an ordinary dry battery, for these measurements. Louis M. Pignolet manufactures electric instruments and electro-therapeutic apparatus, and the address is No. 78 Cortlandt Street, New York, N. Y.

LIGHTNING CONDUCTORS, WEATHER VANES, ETC.

THE use of lightning conductors has been strongly advocated in a recent report written by the electrical experts of the United States Government. Several foreign powers, notably that of France, are extremely careful in protecting all government property, that at Calais especially furnishing a very practical exhibition of the French thoroughness in this scientific direction. Washington monument has been so carefully fortified with means for minimizing the effects of the lightning flash that it is now pronounced to be absolutely safe. Notwithstanding the confidence felt in good conduction of lightning on buildings, a prejudice against the rod has been developed by careless selection in the material, poor work of cable erection, and the inefficient means adopted for securing a proper earth contact. It is obvious, then, that a building should be made safe by the work being done by experienced hands. D. Dorendorf, No. 44 Centre Street and No. 36 Park Street, New York, the successor of C. H. Lilly, who was the first to introduce copper rods about thirty years ago, and had the indorsement of the best electricians, including Cyrus W. Field, has had a great amount of experience in this line of business which has enabled him to get some of the largest contracts, and many of his clients have reported that they were sure that life and property had been often saved from the effects of severe currents by his system of conduction. Mr. Dorendorf manufactures copper cables, six or seven strand wire, with a diameter from 3/8 to 1/2 inch, or 5/8 inch, according to the size of the building rodded. It is made in continuous length, and differs from the old style, which was made ten or twelve feet long. The rod part is a fine pointed bar of copper, plated down a distance of about six inches from the point. The average length of the rod part is about four feet. The wire rope conductor is connected with the rod base by the insertion of the rope into a copper tube at the end of the rod and firmly soldered. When using a plate connection underground, the plate is of the same metal as the conductor, so as to avoid the possibility of local action by which one or the other metal would be eaten away and the continuity ruined. The whole termination is embedded in charcoal. These cable conductors, to the extent of 15,000 feet, have been put upon the shops of the New York Elevated Railroad Company; they are used by the Standard Oil Company, the Metropolitan, New York, and Mutual Life Insurance Companies, and they protect the New York Post Office, the Waldorf-Astoria, the Manhattan Beach, the Murray Hill, and other great hotels; the Seventh Regiment Armory, the Produce and Cotton Exchanges, and many of the most valuable churches, clubs, breweries, banks, and residences in New York and other localities. Besides this specialty of conductors, Mr. Dorendorf manufactures weather vanes made entirely of copper and gilded with the finest gold leaf. D. Dorendorf is a general rigger, and has put flag-poles on many of the largest edifices, such as the Metropolitan Life Insurance Company's new building, Grand Central Depot, Produce Exchange, and New York Post Office.



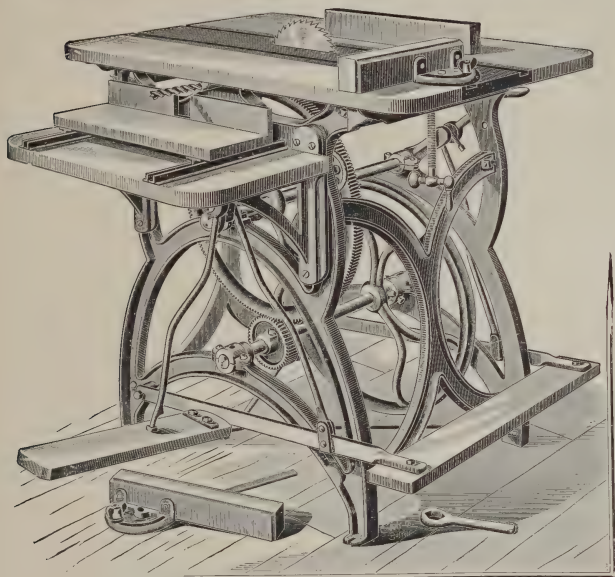
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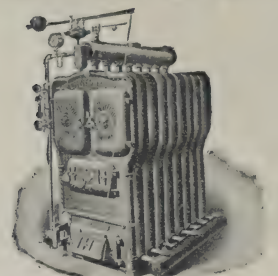
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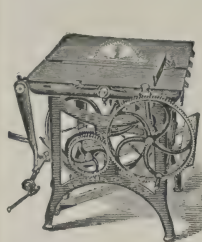
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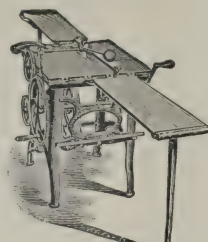
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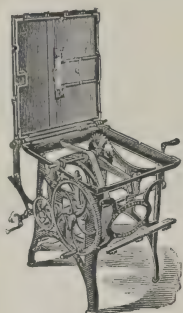
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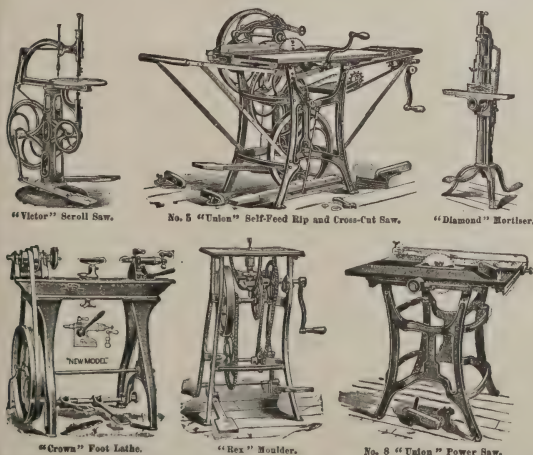
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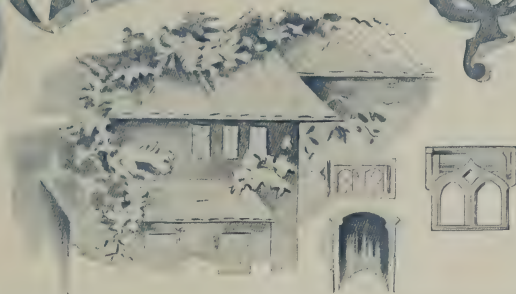
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No. 217

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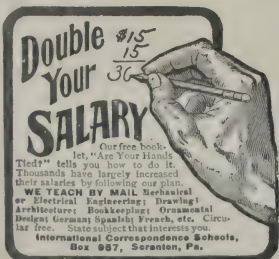
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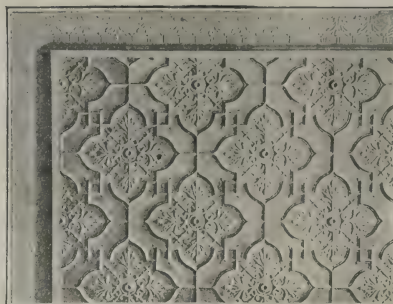
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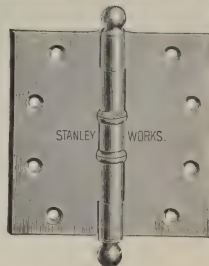
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THE STUDIO.

"THE ORCHARD," SOUTHAMPTON, N. Y.—See page 91.
THE COUNTRY SEAT OF JAMES LAWRENCE BREESE, ESQ.

SCIENTIFIC AMERICAN BUILDING MONTHLY

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*. The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

THE naming of houses, places, farms, and estates is an agreeable custom, often picturesque, sometimes descriptive, and always indicative of interest in one's abode. A name, to be of real value, should be descriptive and appropriate. The fancy should not be permitted to take too high a flight. Yet that naming is a difficult art is apparent from the names attached to many structures, while not a few persons stagger along through life under grotesque cognomens invented by their parents or the product of some passing fancy. If a name can not be appropriate it can be expressive; if not expressive it can, at least, be a good name in itself, one that will look well on a letter head or attached to the entrance door or gate. It should never be foolish, but always sensible. Owners of farms, in particular, will find a good name a good business asset, for it will help in distinguishing special products. House names are more common abroad than in America, and very unsatisfactory many of the foreign names are. That, however, is no reason why good names should not be chosen for American habitations.

ALTHOUGH the ubiquitous trolley is one of the most potent agencies in the expansion of the suburbs, its good work is not always accomplished without friction. Some time ago it was the custom to charge ten cents for a single fare between one of the suburbs of Chicago and the Western metropolis. The suburbanites saw no reason why they should pay such a price, quite forgetting that any one who could get to Chicago for the insignificant sum of ten cents was singularly fortunately situated. The fare was collected on the installment plan, five cents at a time. After paying

the double fare for some time, the victims calmly resolved to pay but one, and refused to come up on the second installment. Ejections by the wholesale followed, but the crusaders could not be deterred from their high duty of teaching the trolley car company what they should pay. When the ejectors appeared, they held their bodies stiffly firm and permitted actual ejection of the roughest kind. Women and children presented the same high courage that the men did, and affairs became so uncomfortable that the railroad company gave up in despair. Those particular suburbanites now enter Chicago in triumph for five cents.

A word of warning should be given in the matter of popular judgment of works of architecture, designs, painted decorations, and sculpture. From time to time, and especially in matters of public work, the judgment of the public is invited in determining the relative merits of two or more suggestions. As a matter of fact the trained architect and artist—the professional man who has made a study of his art his life work—is very much more to be trusted than the views of those who "like what they like." Professional judgment may go astray, it may not only favor the best proposal, but it is more likely to do so than the views of untrained minds. Comparatively few people know what a good piece of art work is. The general public will, in time, rise to an appreciation of a really excellent piece of work; but nothing could be more foolish than to oppose general judgment to professional opinions. The man who has studied a problem is better able to judge it than one who knows nothing whatever about it from the technical standpoint.

BUILDING THE HOUSE.

THE building of a house is one of the most entertaining and engrossing of occupations, albeit one of the most vexatious and wearying. It calls for about as abundant a stock of good temper as any human undertaking. It requires patience. It teaches submission to others. It brings one into direct contact with some highly developed examples of trade unionism. It does all sorts of things to a man, and it is very apt to completely exhaust a woman. It disturbs the soul, ruffles the temper, provokes profanity, destroys peace, creates discussion, and has been known at times to lead to permanent dislocation of the intellect. Yet the most disastrous experiences do not teach wisdom, for single individuals have been known to pass through these fires of bitter woe more than once.

The parties concerned in the building of a house are several separate individualities, each of whom approaches the subject from a distinct point of view, each having his own part to do, and a part which is almost opposed to that taken by the others. First and foremost is the owner. It is, we may imagine, to be his own house, which he is building for himself, and which he hopes to occupy for a goodly number of years. He provides the money and determines the procedure he shall follow.

The very first question that presents itself raises a crucial difficulty. Shall an architect be employed or not? Or a mere builder? Or a purveyor of plans and specifications? Some sort of a general head must be provided, for in most cases the owner is quite unable to be his own superintendent of building operations. Architects of standing have a fee of five per cent—a figure moderate enough for structures of moderate cost, although exceedingly handsome pay when the sum to be spent runs up into the hundreds of thousands and the millions. There are, of course, extras, and additional special commissions for special work, but these are seldom considered until that very painful time of final settlement which is apt to be reached in all building operations, large or small.

It will not be denied that some niggardly persons have thought to save the five per cent. by doing without an architect, but such experiments are seldom successful. It is the architect's business to build houses; some do it better than others; the responsibility for the selection rests on the client; if he selects well, he is almost certain to get better results than if he went into the architect's business himself—of which he knows nothing at all. The builder is not an architect, although he often considers himself one; and the ready-made plans and specifications, while often of considerable interest, and sometimes of positive excellence, can not properly be adjusted to the special conditions which obtain when an individual house is to be built. It would probably be safer to buy a ready-built house than to do without an architect, for then the actual result can be seen and measured, its shortcomings noted, its excellencies realized. But a house building enterprise without an architect is much like a ship at sea without a captain.

But the method of building determined upon, fresh trouble begins. The architect, being by trade and profession, industry and training and calling a builder of houses, naturally knows the whole business from beginning to end. The client, who is perhaps ventur-

ing into the matter for the first time, knows nothing whatever of it save that he sees his money being spent by another man. The position is really quite absurd, for on one hand is a man who knows nothing of the matter appearing as the employer—or boss—of a man who does know, and who knows, moreover, that the aforesaid employer knows nothing at all of the subject. It is easy to see that all sorts of things may result from this, and all sorts of things generally do result. It would be wonderful if they did not.

The architect has one serious disadvantage: he stands alone; there is but one of him. The client, on the other hand, has the valiant support of his wife and such other members of his family as may have reached the years of discretion. Moreover, he can command valuable reinforcements in the opinions and experiences of his friends who have been through the architectural mill, and can tell him all the weak points of the architect. This, of course, increases the difficulties of the architect. He invariably discovers that he has several minds to adjust and coordinate with each other, and his chief reliance is on the differences which exist in his employer's camp. If he is very young it is a positive joy to him to find that the lady wishes the house all closets, while the gentleman thinks only of his dining-room and his own little den or place of retirement to which the women-folk are forbidden. But the joy in recognizing these essential differences speedily gives way to consternation when he finds that he, and he alone, must actually and physically reconcile these requirements. For no lady can give way on the question of closets, and every gentleman must have space within which to entertain his friends.

But it is obvious that conflicts between clients and architects can not be continued indefinitely; compromise of some sort must be effected, and it generally is to the great dissatisfaction of all concerned; for the architect will tell you—if you are not too friendly with his client—just where his beautiful elevation was ruined by absurd interior requirements; and the client, on the other hand, will vow that, should he ever build another house, it will be with another architect.

In time, no doubt, everything will be arranged, but what a terrible bother it has raised, and how much strength of mind has been exercised before the work can be begun! The average client may not realize that before any actual building is begun every part of the house must be drawn out on paper; but such is the fact; and this work is only a part of the preliminaries to the battle royal that will presently ensue when workmen are employed and the real building is begun.

This is the time to look out for serious disturbance. The client can not, generally, read a plan; that is, he does not understand it as the architect does. The building that seemed so attractive on paper, and so thoroughly complete, now begins to exhibit dreadful woes whose presence was completely unknown. It is easy to change anything that has not been completed; but let the architect get a little ahead of the client; let him be a little persistent in carrying out his own views and wishes; let him be a little too sure of what is right and good and best to do—and there will be ructions. Even these matters may be adjusted, but the loss of temper, if translated into dollars, would make a very respectable bank account.

So the work proceeds; to the architect the progress may be fair; to the client it is slow and endless. Fixed dates become the most movable of feasts. Certain promises disappear as the slightest of hypotheses. And then, suddenly, without a word of warning, a worshipful union makes a strike. Then there is real woe, and the architect and client find common ground in fighting the common foe. The occasion of the strike may be the most trivial matter; it may be concerned with totally different building operations; it may have been unconsciously caused because the employing contractor did not thoroughly understand the delicate susceptibilities of the particular unions he had been dealing with; whatever the cause, it is quite immaterial compared with the awful fact that work has stopped, and all sorts of fresh conditions must be complied with before it can proceed.

But at last the work is done: the last nail is driven, the last piece of apparatus is installed; the workmen have left; the house is complete; and the architect comes forward with his little bill. It may be that, with the best intentions in the world, and with the most honest intentions, this document will be of such a nature that all the previous woes of the house building are as calm seas and peaceful deserts compared with what follows. The payment of money is often a painful operation, and even the acquisition of one's own house may not save the wounds inflicted on one's bank account. But the wise man will pay the bill and rejoice that his troubles have come to an end. He has learned a lot, and if he has learned to keep his temper and emerges from the fire a chastened and refined soul, he has well gained the worth of his money.

TALKS ON ARCHITECTURE

By BARR FERREE.

"THE ORCHARD," THE COUNTRY SEAT OF JAMES LAWRENCE BREESE, ESQ., AT SOUTHAMPTON, N. Y.

THE automobile dashed along the road, turned suddenly, and as one gasped at the swift change of direction, we were inside the grounds. Pleasant lawns on either side shadowed with pleasant trees beyond. The eye passed them by rapidly, for there, just before us, was the house—plain, low, simple, white—filling the foreground and stretching to the right and left, happily expressive of the boundless hospitality for which "The Orchard" is famous.

A couple of automobiles stood before the door; the porch seemed filled with people; others walked on the paths before the house. Surely, thought I, a fête must be on, and I piously wished that a less conspicuous place had been available for the scribal down-setting than the main door of this house which charms even

The word "Hospitality" is writ large over this fine mansion; for the house is a mansion, though the design is simple, the architecture restrained, the decorative elements refined and subdued. An old house once stood on the grounds and moved to present site, a house that scarce covered more than the space now occupied by the entrance hall and the library. Its low ceilings have been retained, and thus the general scale set; but the house as a whole is an entirely new structure, in which the architects, Messrs. McKim, Mead & White, completely responded to the ideas of the owner, with the result that one of the most delightful and individual of Long Island country places has been created—for it is a real creation, and more than an erection—on the rather flat land which is characteristic of Southampton.

Outwardly the house is a frank adaptation of the old Southern Colonial house to the modern requirements. If it recalls one model more than another it is perhaps the historic lines of Mt. Vernon which it suggests. But it is a suggestion only, and the house has been

closed on the three others. The development of this plan must have given the architects much joy; for there were no cramping limitations of space, and it was possible to produce a ground plan at once harmonious and beautiful.

I have referred to the hospitable character of the house; it possesses another quality of a quite comparable kind, and that is its livability. Mr. Breeze has erected a place that may, in many senses—since it is very wonderful and wonderfully interesting—be called a "show place"; yet he has been quite indifferent to splendor in his search for comfort, convenience, and the pleasure of living in a pleasant house. His rooms are delightful; low celled, agreeably colored, tastefully decorated and furnished, almost completely, with genuine old mahogany pieces picked up by himself, mostly in the South! Think of that, if you please, and then be not envious of this delightful gentleman's many possessions if you can!

Let me run briefly through his color schemes. Music-room: pale green silk hangings and wall paper, white



DINING-ROOM, RESIDENCE AT ATLANTA, GA.—See page 107.

the casual passer-by, and which I was soon to find both charming and altogether delightful within.

But Mr. Breeze instantly set me at my ease, and though his house appeared thronged with company, he devoted himself so entirely to satisfying my curiosity as to his estate, its making, its furnishing, its equipment, and its various parts, as though the giving of information on these matters was the special reason of his existence as well as his greatest pleasure. And, indeed, I have no doubt the latter was entirely true, for, while the place is new—he moved in in June, 1898—he has transformed what was once a comparatively small old house into a spacious mansion, splendid in size, ample in its comfort-giving qualities, and furnished throughout in a most interesting and delightful manner, which was done by spending several happy years in adding on, changing, improving, and bettering. Nor has his inventive care and lavish interest been limited to the house alone, for the estate, though comprising but thirty acres, is entirely complete within itself, admirably kept up and maintained in beautiful condition.

planned and carried out without thought of copying, but with the single idea of making a hospitable place where one might live comfortably in the country, entertain one's friends, and engage in such rural sports and undertakings as a man of wealth and culture might naturally be interested in.

No house is ever larger within than it is without, and yet it is not until this house has been seen from the back that its true size is comprehended. Mr. Breeze has built regardless of space, and in a manner that is best described as ample. The main building contains but two rooms, a music room and a library, separated by a wide entrance or general hall. Beyond these is a rear hall, running the full length of the house and connecting the two main wings; on the right is the studio, with a squash court beyond; on the left the dining-room, breakfast-room, kitchen, with servants' quarters still further out. Each of these latter buildings—the servants' quarters and the squash court, are recessed still further away from the imaginary central axis, so that the rear of the building surrounds a great court, open at the further side and en-

India rugs and white (polar) bear skins; main hall: all white paneling, dark red India rug; library: light brown hangings and paper, green India rug; rear hall: wainscoted below, reproductions of old Colonial landscape wall paper above, in delightful cool gray tones; dining-room: white panels to the ceiling, blue decorations, the walls hung with brass plaques and blue Chinese plates; studio—but that deserves a paragraph of its own. The ceilings are throughout of old Colonial designs, in low relief. The mantels are chiefly old ones. All of the doors on the first floor are old New York doors of mahogany cut down to fit their present places; and much of the interior trim is genuinely old. No patchwork, mark you; no building up of rooms around a single feature; no apparent use of old material because it happened to be old and the owner was lucky enough to become possessed of it. The house is absolutely harmonious and in the best of taste. It is frankly Colonial in its character; one must have ceilings, doors and mantels; why, therefore, refuse genuine old work if it is good and one has place for it?

(Concluded on page 104.)



VIEW OF HOUSE.



THE GARDENS.

"THE ORCHARD," SOUTHAMPTON, N. Y.—See page 91.
THE COUNTRY SEAT OF JAMES LAWRENCE BREESE, ESQ.



MUSIC ROOM.



DINING-ROOM.

"THE ORCHARD," SOUTHAMPTON, N. Y.—See page 91.
THE COUNTRY SEAT OF JAMES LAWRENCE BREESE, ESQ.



CONSERVATORY.



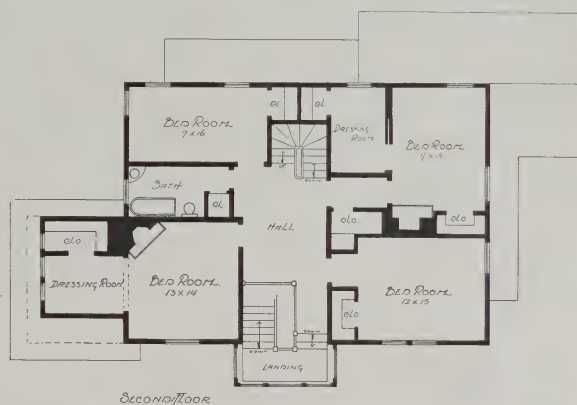
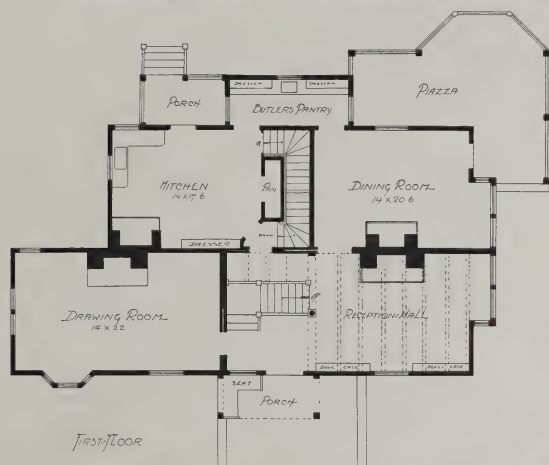
WALL FOUNTAIN.



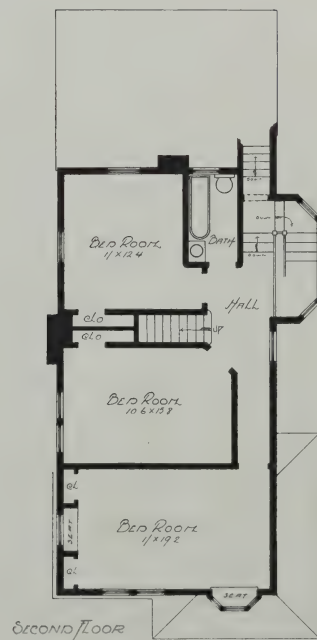
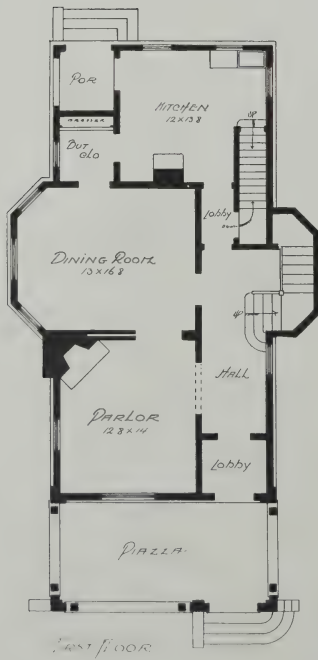
PORCH.



HALL.

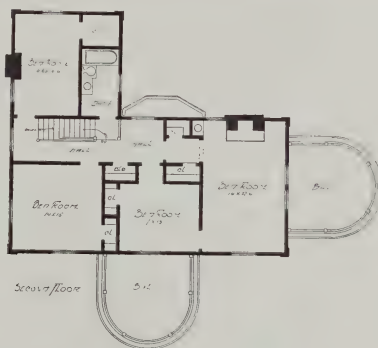
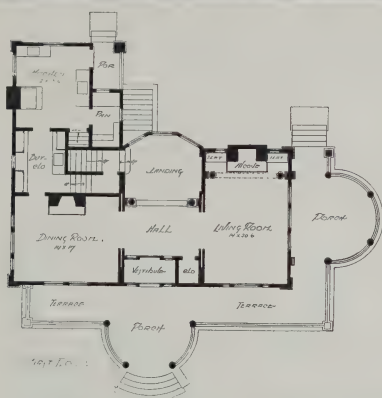


RESIDENCE OF FRANKLIN PHILIPS, ESQ., MOUNT PROSPECT AVENUE, NEWARK, N. J.—See page 105.
MR. ALBERT PHILIPS, ARCHITECT.



HOUSE AT GLENSIDE, PA.—See page 106.

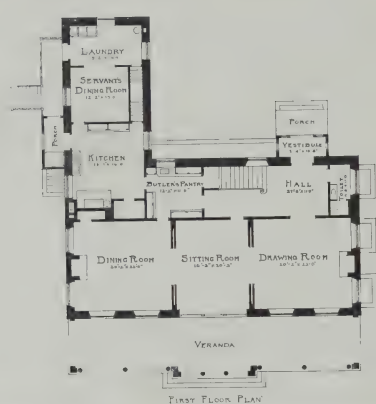
MR. ALBERT ELLIS YARNALL, ARCHITECT.



RESIDENCE OF CHARLES G. TRAUTWEIN, ESQ., YONKERS, N. Y.—See page 106.
MR. L. C. HOLDEN, ARCHITECT.



FRONT VIEW OF HOUSE.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



LIVING-ROOM.

RESIDENCE AT WOODMERE, LONG ISLAND.—See page 109.

MR. ERNEST FLAGG, ARCHITECT.



DINING-ROOM.



REAR VIEW OF HOUSE.

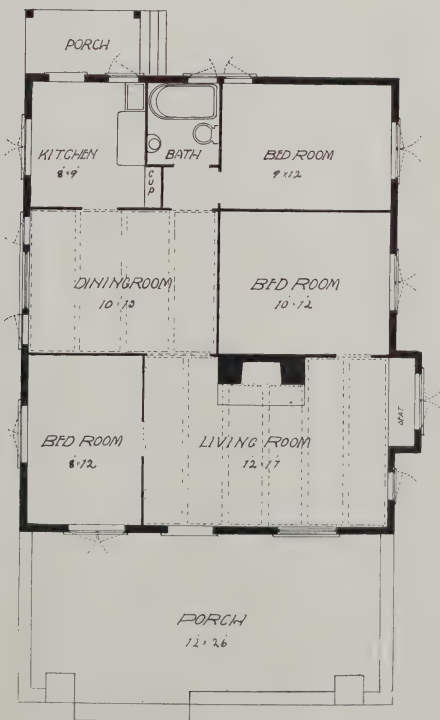
RESIDENCE AT WOODMERE, LONG ISLAND.—See page 109.

MR. ERNEST FLAGG, ARCHITECT.



A RESIDENCE AT ATLANTA, GA.—See page 107.

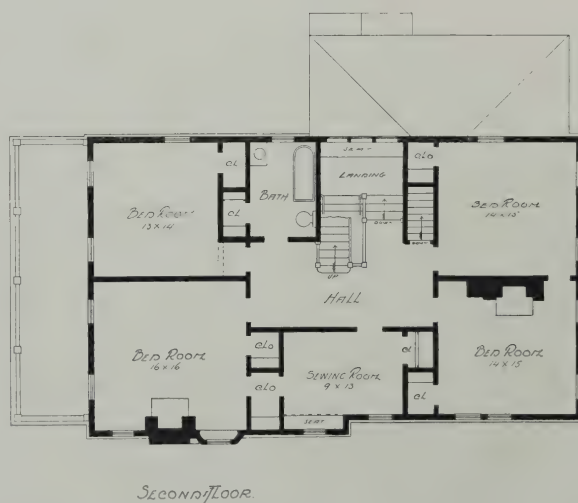
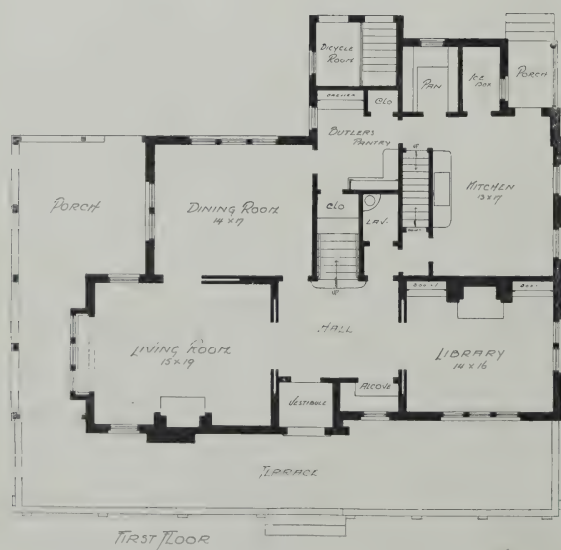
MR. W. T. DOWNING, ARCHITECT.



AN \$800 BUNGALOW AT SOUTH HAVEN, MICH.—See page 107.
MR. A. M. WORTHINGTON, ARCHITECT.



FRONT VIEW.



RESIDENCE OF ROYAL B. STURTEVANT, ESQ., SPRINGFIELD, MASS.—See page 105.

MR. FRED W. LUMIS, ARCHITECT.



THE HALL.



SIDE VIEW.

RESIDENCE OF ROYAL B. STURTETANT, ESQ., SPRINGFIELD, MASS.—See page 105.
MR. FRED W. LUMIS, ARCHITECT.

"THE ORCHARD," THE COUNTRY SEAT OF JAMES
LAWRENCE BREESE, ESQ., AT
SOUTHAMPTON, N. Y.

(Concluded from page 91.)

The two great wings of the house are connected with the main portion by narrow passageways; the one on the right has been transformed into a conservatory. The floor is glazed with old Chinese glazed tiles, the ceiling arched lattice work; one wall contains a fine old Italian fountain picked up by Mr. Stanford White in Italy. The conservatory forms an antechamber to the studio, which is entered immediately through it. The studio is the most elaborate room in the house. It is paneled in California redwood; above are eight or ten large decorative panels; they are old Flemish paintings on canvas, perhaps designs for tapestries, but very beautiful and rich in color. The room is two stories high, having a total height of about nineteen feet, and is ceiled with beams of California redwood, with rough white plaster between. The floor area is ample, 45 feet by 30 feet, so that Mr. Breese has here a room of very large proportions, and filled with a host of beautiful and interesting objects. The vast fireplace

is made of stones taken from the foundations of the old house—an admirable instance of decorative economy, since Mr. Breese assured me that stones did not grow in his region, and it was wise to be careful as one could of what one could find. The opening is over six feet high and six feet wide; only driftwood is burned in it, and the flames shoot up with such brilliancy that several entertainments have been given in the room without other light. Just before the fireplace stand two old Italian ecclesiastical candelabra, massive and splendid examples of old brass work. The ceiling candelabra are likewise old Italian, and directly from the center hangs a full rigged Dutch ship, a metal model at least a hundred and fifty years old. The stairs at the back of the studio lead to the billiard-room above. Beyond is a darkroom, a gun room, a bicycle room, and bathroom connected with the squash court.

The studio is perhaps the most distinctive room of the house; but every room is marked by a deep personality, and expresses the thoroughly human interest of the owner in his dwelling. The many framed photographs, the multitude of ornaments, the fine old furniture, and, finally, the plants and flowers with which nearly every room is embowered, speak aloud of the deep interest that has been put forth in the making of this beautiful house.

As we passed through the house there had been many suggestive glances of loveliness without through the windows, but I was hardly prepared for the wonderful garden behind the house until we went out and stood upon the porch. Immediately in the foreground is the rose garden, a space about sixty feet square, and filling the area immediately within the wings of the house. In the center, a graceful fountain; walks of brick, box lined, as all the walks are, for the dew in Southampton is so excessive that grass walks are out of the question. A lovely and beautiful spot of flowers, this rose garden.

At its conclusion begins the pergola, stretching back on either side full two hundred feet; bounded, on the outer edge, with a low brick wall, above which rise short square piers; within, a row of circular columns, the whole flat roof with natural branches. Already, though scarce more than completed, the vines have made good headway, but it is ultimately proposed to be covered with grapevines. At the far end the pergola is opened to the ground, with double rows of columns opening to a still further vista beyond. The space beyond contains the vegetable garden; but the central path is lined with peach trees on either side, and ultimately Mr. Breese expects to extend his pergola down this path clear to the bounding wall of his property, a good six hundred and sixty feet from his house. The space within the pergola is brightly planted with hardy shrubs and flowers, so selected that, throughout the season, there will be a constant succession of bloom. Without it is a similar bed along the bounding walls; then a path, and the trees of the old orchard which happily enough fit in perfectly with the present development of the grounds.

Verily there would seem no end to Mr. Breese's ornamental gardening, so vast the scale, so elaborate the

architectural adornments, so ample the space, so varied the shrubbery and the flowers; yet as a matter of fact the ornamental grounds include just what have been described and no more. Yet there is much more to the estate, and much of interest on it. It has been so planned and developed that the house and garden stand considerably to the right of the center of the whole property, the house grounds running right through from the main road to the boundary of the furthest end. On each side are broad stretches of lawn; the old trees determined the location of the house, and the newer plantings were designed to assist the effect of the original growth. To the left of the main entrance is a long drive, reaching straight back to the stables and service houses, and here, well beyond the house grounds and the vegetable garden, are gathered the many buildings needed in the cultivation of so varied an estate.

Here are the gardener's cottage, corn cribs, ice house, machine shop, hotbeds, carriage house and stable, chicken houses, an old barn, a shooting tower, greenhouses, and other buildings, among which the garage for automobiles should not be forgotten, the plant



Plan: "The Orchard," Southampton, N. Y.

being so complete that Mr. Breese is able to carry out every possible work in connection with the automobile repairing save casting, and even that is looked forward to in the future. The shooting tower, I was obliged to admit, was something new to me in architectural features. It is, it seems, a tower built that clay pigeons may be projected forth into space from its summit. Originally it was a bare scaffold, which quickly offended Mr. Breese's artistic eye, and his architects were forthwith directed to give it artistic expression. This was speedily done, and thus one of the most unique features of this most unique estate came into existence.

LAVENDER COLOR.

LAVENDER, says an exchange, is a color which has been used very little in household decoration. It is a trying color to most complexions, and it is rather too pensive in its suggestion. Recently, however, some beautiful chintzes and tapestries have appeared in lilac and lavender tones, and the shops are even offering bedroom sets stained or enameled in the same hues. An artistic bed comes from an English house, the straight, simple lines stained a rich, deep lavender. The wood is rubbed down to a fine wax finish, and the only decorations are small inserts of dull gold and brown in the central panels of the head and foot boards.



THE BATHROOM.

The bathroom, pointed out Mr. John Hopkins, of Memphis, Tenn., in a lecture some time since, should be well lighted—that is, with windows—so that the sunlight could come in; it should be heated to a much higher temperature than any other room in the house, and should also be thoroughly ventilated; the walls, doors, and casing should be of such material or finished in such a way as would be proof against water and steam; there should be no sharp corners or square angles, as they hold dirt, and are not easy to clean; the floors should never be covered with carpet, as it is a very unsanitary thing for any bathroom.

Hard wood makes a good floor for a bathroom, also tile or monolith. Monolith can be used for a floor or wainscoting in bathroom, and for kitchen wainscoting it is very hard, fireproof, and claimed to be cheap and easily applied in any house. A few rugs may be used, as they can be removed and cleaned on short notice.

Never paper the walls or ceiling of a bathroom under any circumstances, as it is not only a poor material to stand water and steam, but it is a most unsanitary thing for such places. A bathroom is never properly ventilated where it is necessary to open the door leading to it in order to get pure air in or expel foul air from it. Where such is the case we simply remove the bad air from the bathroom to some other or all parts of the house.

We must certainly provide warmer bathrooms for the protection of the plumbing fixtures; the experience of the past winter makes this necessary if expensive plumber bills are to be saved, besides the trouble and annoyance of being without the use of your bathroom some parts of the winter time; this is useless, and can be prevented. But better and warmer houses must come; plumbing fixtures must be protected from frost, or they will burst.

ARTISTIC FURNISHINGS.

"I'm sure I don't know why people should say I have good taste," said the owner of a hospitable suburban home that had long been a Mecca for those of city and country alike who were so fortunate as to enjoy its privileges, and quoted in a contemporary. "I've never bothered my head about it. Things just seem to settle down into the rooms along with the family and their wants and wishes. It looks just like any simple, plain, homely old place to me."

In this remark the author of the tastefulness in question unconsciously touched its secret. She was a

woman of refinement, and red and yellow chintzes, wax flowers and crocheted tidies naturally did not come within her horizon. Also, she did not bother her head about what "they" were using now or what "they" said was "artistic" or "the thing." It did not occur to her to purchase a Russian sled, a Bengal tiger skin, and a Tuscan urn as adjuncts of an artificial "cozy corner." All the corners in her many roomed home seemed cozy because they had been let alone, and easy chairs and divans and rugs and pictures had gathered and grouped themselves together as comfort dictated.

The "eternal fitness of things" is a much better guide to house furnishing than the special department in the last fashion magazine. One of the crying abuses of modern houses is the use of so-called ornaments. A peasant cottage in Brittany possesses more real beauty and exhibits more true taste than many a "mansion" of the wealthy. Few of the poor have the courage of their poverty, but must perforce overcrowd mantel and shelf and stand with flimsy knickknacks of no earthly use, and which even the most perverted taste can not pronounce beautiful. The supreme test of the perfection of a room is: Is it comfortable, homelike, livable? No bric-à-brac shop can be that. Even an ignorant and tasteless nature feels the subtle influence of harmonizing colors and really beautiful and simple lines and accessories.



THE EDUCATED COOK.

WHY, asks the Commercial Advertiser, should it be thought degrading for a gentlewoman who has acquired a certain knowledge of cookery to call herself a cook, and to take a situation as such? Surely it is time for her to rouse herself and become aware that, if she will cast her false pride to the winds and boldly enter on her duties, she can command for her services a higher rate of remuneration, more actual comfort in her surroundings, and a considerable increase of independence. Likewise, if she is truly skilful and possessed of tact, she can easily enforce respect, for the cook, where there is no housekeeper, naturally maintains the supremacy of the kitchen; and there would be few members of the household, from the master down to the kitchen maid, who would care to offend so important and invaluable a person as the cook.

It is not absolutely necessary to take a situation where men servants are employed, although in a large establishment the cook, or cook-housekeeper, need rarely come in contact with any male domestic except the butler, and, doubtless, it would be possible to stipulate for a small sitting-room to be kept for her own use. Besides, it is an absurd mistake to suppose that servants can be classed as belonging to one grade. The upper servants in a large house are often superior both in mind and manners, and no gentlewoman, willing to work with them in harmony, would receive any unpleasant impression in her slight obligatory intercourse.

The educated cook is not an unknown quantity. She has not been a great success owing to two things—her morbid pride and her lack of physical strength. Her strength is inadequate to the physical exertion required of her in situations where she seeks to be treated as the equal of the mistress of the house. She is so exceedingly anxious to maintain her somewhat equivocal position that she overlooks the advantages of a post where proper help in the rough work would be provided, and strictly confines her attentions to the family where she is to be treated as "one of themselves," or where her fellow-helpers are of her own class.

This very same gentlewoman who objects to work with "common servants," as she calls them, cheerfully submits to toil in an office with persons far beneath the class she condemns. She will, moreover, condescend to become a parsy governess at practically starvation wages. She will even take a situation without any salary at all, if it is as companion, or "to assist a lady (?) in the management of her house. She will learn typewriting and shorthand, and wear herself out slaving for \$10 a week, on which she has to keep herself, pay her fares, and dress. But, as for making up her mind to qualify herself, by training and experience, for a well paid post, with only a slight social drawback, that appears to her to be out of the question. Could not the modern woman take her future into her own hands, and refuse to allow foolish pride to ruin her prospects of success in an occupation which holds out a secure and increasing salary, and in which the demand is, for a wonder, far greater than the supply? Is it not unwise to permit a few social considerations to stand in the way?

ART IN THE KITCHEN.

ARTISTIC furnishings are finding their way into the kitchen, says an exchange. Sideboards are now constructed to supersede the ordinary kitchen dresser, the material being pine. A cupboard with doors of speckled cathedral glass, in diamond-shape and leaden frame, is set in the center of the shelves. The shelves themselves conveniently widen in their ascent, thus overlapping each other. A deep drawer occupies the space below to right and left of the sideboard dresser, and there is a shallower center drawer for table linen. The capacious space beneath is set off with an embroidered curtain, hung on rings that slide along a brass rod. The shelves are supplied with cheap specimens of Doulton or other attractive ware to be interspersed among the dishes. The sideboard dresser top may be painted green, the wall of the kitchen which forms the backing in olive, while to accord with the cheerful glow of color afforded, stenciled decorations may be carried out on each side of the sideboard several feet high above the chair rail, the full length of the wall.

The clothes hamper should be scrubbed occasionally with salt water and rinsed with fresh. It should be frequently aired.

RESIDENCE OF ROYAL B. STURTEVANT, ESQ.,
AT SPRINGFIELD, MASS.

The illustrations shown on pages 102 and 103 present a residence erected for Royal B. Sturtevant, Esq., at Springfield, Mass. The house is of English treatment, and is constructed of brick and half timber. The terrace and first story are built of selected common red brick laid in Flemish bond. The terrace floor is of cement. The second and third stories are beamed with California redwood; the spaces between are filled in with stuccowork and the beams are treated with a soft brown color. The roof is covered with shingles and is painted red. Dimensions: Front, 53 ft.; side, 43 ft., exclusive of terrace and piazza. Height of ceilings: Cellar, 7 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The vestibule is trimmed with quartered oak and the walls and ceilings are paneled. It has a tiled floor. The hall is trimmed with quartered oak and the walls are paneled and the ceilings are beamed. The staircase is recessed, forming a boxed stairway, which is also of oak, and is paneled up the sides of the stairway to the second story. The library is trimmed with red brick and is provided with a wainscoting 4 ft. in height, wooden cornice, and ornamental bookcases at the side of fireplace, with doors glazed with leaded glass. The fireplace has facings and a hearth of dull red tile and a carved mantel. The living-room is trimmed with quartered oak and has a cluster of windows with seats under the same at one end of the room and an ornamental fireplace carved out of Indiana limestone, with a carved mantel and overmantel. The dining-room is also trimmed with oak, and has a paneled wainscoting to the height of 6 ft. and finished with a plate rack, above which there is a wooden cornice. The butler's pantry, which is of unusual dimensions, is trimmed with hard pine and is fitted up with all the modern conveniences. The kitchen is also trimmed with hard pine and has a wainscoting of Keene's cement, with a "hospital" base, sink, range, pantry, icebox, and stairs to the cellar and also to the second story.

The second story contains four bedrooms, sewing-hall, large closets, and a bathroom. The woodwork throughout this floor is treated with white enamel rubbed to a dull surface. The fireplaces are faced with dull mottled tiles and the mantels are of simple yet artistic design. The bathroom has a wainscoting of Keene's cement enameled white, and it contains porcelain fixtures and exposed plumbing, all nickel-plated.

There are two servants' bedrooms and bath, trunk room and a billiard-room on the third floor. The cellar contains a boiler-room, laundry, cold storage, store closet, etc. Mr. Fred W. Lumis, architect, Springfield, Mass.

RESIDENCE OF FRANKLIN PHILIPS, ESQ., AT MOUNT
PROSPECT AVENUE, NEWARK, N. J.

ON page 95 will be found illustrations of the residence of Franklin Philips, Esq., at Mount Prospect Avenue, Newark, N. J.

The building is treated in a modified adaptation of the best features of the old English Colonial style of architecture. The underpinning and chimneys are constructed of rock-faced stone. The superstructure, of wood, is covered with matched sheathing, and then cedar shingles, which are left to finish a natural silver gray. The trimmings are painted white. The roof is covered with shingles and is stained a moss green. The entrance, with its quaint, massive oak door and wooden settle, forms an inviting welcome to a still more attractive interior. Dimensions: Front, 57 ft.; side, 35 ft. 6 in., exclusive of piazza and porch. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The main feature of the interior is the reception-hall, which is finished with California redwood and provided with a massive mantel of the same wood. The ceiling is beamed and the walls have paneled wainscoting and built in bookcases. The fireplace is of brick with tiled facings and hearth. The staircase is of an ornamental character. The drawing-room is treated in the Colonial style, with ivory white trim, and it has an open fireplace with a tiled hearth and facings, and a mantel of dainty design. The drawing-room has a Colonial wainscoting and a fireplace. The butler's pantry, kitchen and its dependencies, are furnished with all the best modern conveniences.

The second floor is treated with china white, and it contains four bedrooms, large closets, two dressing-rooms, and a bathroom; the latter is furnished with porcelain fixtures and exposed nickel-plated plumbing. The servants' rooms and trunk room are located on the third floor. A cellar, cemented, contains a steam heater, fuel rooms, laundry, and cold storage.

Mr. Albert Philips, architect, Prudential Building, Newark, N. J.

Good houses should mean good people and lives well lived.

THE WHITE HOUSE BAY TREES AND
BOXWOODS.

THE new ornaments of the White House comprise sixty-six bay trees, all imported from Boskoop, Holland, and each one specially selected for its size and perfect contour. The majority of the bay trees have tops sixty inches in diameter, the tree stems being from thirty-six to forty-two inches in length and the total height ranging from fifty-one to fifty-four inches. As the trees are planted in tubs, each two feet high, the tops of the bays tower above the heads of persons walking on the level of the terraces, and they are, of course, far above the heads of persons seated at the tables used for serving refreshments on the occasions of Mrs. Roosevelt's outdoor levees.

There also occupy places on the terraces six pairs of pyramidal bay trees, each thirty-six inches in diameter, and finally there are the four giants of the miniature forest. Two of these trees have ball-shaped tops, while the other two have pyramidal heads. Each of these trees is seventy-eight inches in diameter and likewise seventy-eight inches in height. Most of the trees are from fifteen to twenty years of age, but each of the large standars at the north entrance has attained the advanced age of thirty years. In order to emphasize the distinctive appearance of the bay trees the architects have interspersed them with seventy-two boxwood pyramids of three sizes.

The boxwood has foliage of a lighter green, which contrasts admirably with the deeper tint of the bay leaves. The smallest boxwood pyramids which have places on the terraces are a foot and a half in diameter and only two feet high. The second size is two feet in diameter and three feet high, and the largest size has a diameter of two and a half feet by a height of four feet. The movement to Washington of the large bay trees was of itself quite an undertaking. In the first place, the steamer which conveyed the trees from Holland was delayed for a week on the voyage, but the bays had been so well prepared in a traveling dress of burlap that the unusual duration of the trip did not affect their condition in the least. When, however, the cars bearing the new White House treasures started for Washington a serious difficulty was encountered, for it was found that the special cars which it was necessary to provide in order to accommodate the tallest trees—which in their packing towered to a height of twelve feet—would not pass through the tunnels on the direct lines to the capital, and consequently it was found necessary to transport them to Washington by a roundabout route.

A COLONIAL GARDEN.

ONE of the most interesting developments of New York's parks during the past season was the creation of a Colonial garden in conjunction with the historic Van Cortlandt mansion in the Borough of the Bronx.

A broad rustic stairway leads from the end of the lawn down into the garden, which is fringed on all sides with green slopes, up from which rise rows of tall locust trees. The garden is a square of five acres, fashioned after the old Dutch style, and on three sides is a moat ten feet in width filled with water. It is crossed in the center of each side by a rustic bridge. On the inside of the square was a broad border of greens, while a broad Telford walk makes another inner border. Two broad transverse walks, forming a cross, divide the square into four squares, and in the center where these walks cut each other is a fountain. Around the gray stone circle of the fountain was a ring of green.

Each of the four squares which form the garden is bordered with boxwood. The heart of each square is a little lawn in itself. Between the grass and the boxwood bordering is a broad band devoted to herbaceous plants. Here was the German iris, the japonica, the azaleas, the bleeding hearts, the sweet-williams, the poppies, and the rhododendrons.

There were the little blue spruce trees of Japan, the Japanese maples, and at each corner of the four squares the umbrella maples.

Prettier still were the weeping cherry trees with fine branches. They are grafted on the wild cherry, from which it is hoped they will acquire greater strength and endurance, while losing none of their peculiarly attractive properties.

The slope immediately below the mansion, and on either side of the rustic stairway, was rich with rhododendrons and azaleas, making a glowing picture beneath the fine old oaks of the lawn and the locusts on either hand.



Heating Talk

SOFT COAL STOVES.

THE increased attention now being given to the adaptation of stoves to the use of soft coal opens up a wide opportunity for the display of inventive genius, says the Metal Worker. This is a proper direction for manufacturers to take in bringing out new goods and in opening up a field in which the opportunities for increased trade are almost unlimited. Bituminous coal is so very widely distributed throughout this country that it has often been a matter of surprise to those not actually engaged in the manufacture of stoves that the field has not been more thoroughly exploited. With the great energy shown in this line, it now seems highly probable that users of stoves will find that they are able to secure constructions which will permit them to use advantageously the cheap fuels of their particular locality. The stoves which have recently been brought out are not only well adapted to secure the more perfect combustion of soft coal and avoid the unpleasant accompaniments of soot and smoke, but they are also constructed with a view to keeping fire for longer periods than had formerly been thought possible with this fuel. One great advantage hitherto held by stoves burning anthracite was the greatly diminished attention needed as compared with the frequent firings necessary in using soft coal apparatus. The improvement in the construction of soft coal heating stoves has reached such a point that magazine firing has been found feasible. It may be expected that the progress which has been made so rapidly during the recent past will be continued. Advancement in this respect will especially inure to the advantage of manufacturers located at a considerable distance from the anthracite region.

OIL FUEL.

FREEDOM from smoke and ashes has long been recognized as among the advantages of liquid fuel. So, too, has been the fact that it occupies only about half as much space as the coal needed to generate the same amount of heat. At sea, both in the merchant marine and the navies of the world, this is a strong recommendation. More room is thus left for freight, which helps to pay dividends; or, a double supply having been taken aboard, a vessel's range of activity is correspondingly extended. A merit with which engineers are less familiar, perhaps, and which will further commend petroleum to naval officers, is mentioned by Professor Arthur L. Williston, in a paper on liquid fuel in the Engineering Magazine. Fires can be forced to a greater degree with oil than with coal. The significance of that possibility is seen at once when it is remembered that in many crises during a war much depends on a slight increase in a warship's steaming capacity, either for a short period, as during the chase after Cervera's fleet at Santiago, or a long voyage like that of the Oregon from the Pacific Coast.

ARE OUR HOUSES TOO WARM?

THE fact that European houses are kept about ten degrees cooler than ours during the winter season has caused a good many people, points out the Boston Transcript, to conclude that we have our rooms too warm, and a scarcity of coal, which would cause lower temperatures to prevail, might be good for our health. But it must not be forgotten that we are not Europeans. We are reared in a quite different climate. The hot, almost tropical summers we endure train us to desires as to temperature such as those who dwell where such hot seasons do not occur are unacquainted with. The melting heat of our autumn often yields suddenly to the zero weather of early winter. Under such rapid changes those who would escape illness must keep warm.

In addition to this, we are, as a people, made nervous and quite sensitive to cold by the dryness of the air peculiar to the United States. The European populations dwell in a far damper climate, and many live in cold houses and drink alcoholic liquors with a freedom we can not imitate without disastrous results. This effect of dryness of atmosphere is observable in many ways. The residents of the drier Western States are more subject to nervous diseases than those in more moist climates. The effect of alcoholic liquors is markedly increased by the change from Europe to this country of foreign-born people. Students of nervous diseases are inclined to believe that coffee and tea drinking is decreasing among our native-born population because of the sensitiveness of people who, with a generation or two of their families, have been exposed to our climate.

A HOUSE AT GLENSIDE, PA.

THE modern dwelling presented on page 96 has been erected for Mr. C. H. B. Roberts, at Glenside, Pa. The first story from grade is built of hard burned red brick to the height of the first story window sills; the remainder of the first story is of wood, with the exterior framework covered with sheathing and shingles, which are stained a soft brown color. The second story and gables are beamed, forming panels, which are filled with plaster work. This plaster work is left in its natural silver gray color, while the trimmings and beams are stained a dark, soft brown. The sashes are painted white. The roof is covered with shingles and left to weather finish. Dimensions: Front, 29 ft.; side, 42 ft., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft. 6 in.; third, 8 ft.

The hall and vestibule are trimmed with chestnut and finished natural; the former contains an ornamental staircase, turned out of similar wood, with a paneled seat at the side, which is built in a bay window thrown out at the side of the building. The parlor and dining-room are also trimmed with chestnut; the former is provided with an open fireplace furnished with tiled facings and hearth and a mantel of good design. The pantry is fitted with drawers, dressers, and cupboards. The kitchen is finished with North Carolina pine and is provided with a range, dresser, sink, etc.

There are three bedrooms with large closets, and a bathroom on the second floor; all trimmed with chestnut. The bathroom is provided with porcelain fixtures and exposed plumbing, all nickelplated. There are three bedrooms and ample storage room on the third floor. A cemented cellar contains a furnace room, coal and wood bins, etc.

Mr. Albert Ellis Yarnall, architect, 14 South Broad Street, Philadelphia, Pa.

RESIDENCE OF CHARLES G. TRAUTWEIN, ESQ., AT YONKERS, N. Y.

THE residence which is illustrated on page 97 has been erected for Charles G. Trautwein, Esq., on Sunnyside Drive, Yonkers, N. Y. The underpinning is built of rock-faced bluestone, and the exterior framework is covered with matched sheathing and then clapboards, which are painted a light gray, with white trimmings. The roof is covered with shingles and is left to weather finish naturally. Dimensions: Front, 45 ft. 6 in.; side, 39 ft. 6 in., exclusive of piazza. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 10 ft.; second, 9 ft.; third, 8 ft.

The entrance is through a vestibule, which is provided with a tiled floor and paneled walls and ceiling, which are treated with china white enamel. The hall is a central one, and is trimmed with white pine treated with china white enamel. This hall is provided with a broad platform, which is up two risers and separated by an archway with pilaster and Ionic columns, and also a bay window with a paneled seat. The stairs rise from this platform to the second story. The living-room is treated the same as the hall, and has an alcove separated from the living-room by an archway supported on Ionic columns, and containing an open fireplace furnished with tiled facings and hearth and a Colonial mantel. A paneled wainscoting extends around this alcove, and on either side of the fireplace there are paneled seats, over which there are delicate tinted glass windows. The dining-room is trimmed with quartered oak and has a paneled wainscoting to the height of the mantel, which forms an attractive feature of this room. The fireplace is also provided with tiled facings and hearth, and on one side of which there is a china closet built in with leaded glass doors. The butler's pantry is fitted with dressers, closets, sink, etc. The kitchen is furnished with all the best modern conveniences.

The second story is trimmed with white pine, and is treated with white enamel, and contains four bedrooms and a bathroom, the latter having a tiled wainscoting and porcelain fixtures and exposed nickel-plated plumbing. There are two bedrooms and a trunk room on the third floor. A cemented cellar contains a laundry, furnace, fuel rooms, and cold storage.

Mr. L. C. Holden, architect, 1133 Broadway, New York.

APARTMENT CONVENIENCES.

THE young couple, says Good Housekeeping, who go to housekeeping on small means find a well equipped apartment at a higher rent more economical than a cheaper one for which everything must be purchased. For instance, in New York there are thousands of apartments provided with a gas range and warming closet, set tubs, refrigerator, folding table in the kitchen, window shades, screens, built-in china closet, and frequently stationary window seats. These items are not only a saving of money at the outset of housekeeping, but one should take into consideration the fact that they are always designed to occupy the least possible room, which is no small boon in a tiny apartment.



Plumbing

PLUMBING INSPECTION.

THE duties of a plumbing inspector in any city are of great importance, says the Metal Worker, although but little is known regarding his work except by the comparatively few people who are brought into direct contact with him in his official capacity. His duty, primarily, is to protect citizens from the deleterious effect of sewer air, and so to aid in safeguarding the public health. In the larger cities the functions of the plumbing inspector are clearly outlined and considerable attention is paid to their careful observance. Some difficulty, however, is occasionally experienced in towns newly provided with plumbing regulations, where their observance interferes more or less with customs which have become established. Here the value of a competent and vigilant plumbing inspector is of more than ordinary importance. There are many who are disposed to look upon the introduction of plumbing regulations as a gratuitous assumption of authority on the part of the city government, and who fancy that their evasion is a laudable act. While, in many instances, the deviations from the regulations are of comparatively small importance, yet to allow one citizen to violate them would be to invite their general disregard. This makes it necessary for the plumbing inspector to take a positive stand in insisting that the letter of the law shall be carried out, as well as the spirit. This sometimes causes friction, particularly when some individual citizen brings his influence to bear in the endeavor to secure favors to which he is not entitled. Sometimes the greatest trouble the plumbing inspector meets with comes from those plumbers who have not felt the necessity of keeping pace with progress nor realized the benefits that accrue to the community in general from the observance of the plumbing regulations and the profit that results from doing work in accordance with them. The plumber, wherever situated, will be lending substantial aid to sanitary work if he informs himself thoroughly as to the details of the local plumbing regulations and also of the various causes which have led to their adoption, and then explains their advantage to his customers, present and prospective. By this means he will be able to remove much of the opposition that is raised by his clients, and at the same time prepare for the easier collection of the bills which he may have against them.

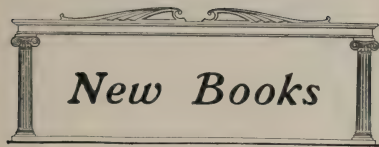
THE SANITARY VALUE OF SLATE.

A MATERIAL that seems to be designed by nature for use where a clean, non-absorbent surface is required, says Cement and Slate, is slate. It meets all of these requirements, combined with strength and durability, and can be made neat and even beautiful where adornment is required. The surface is smooth, therefore it will not absorb oils or odorous or decaying organic matter; it is not affected by acids, in which respect it is better even than marble. It is impervious to water, air, and changing weather conditions, and not sensibly affected by ordinary variations in the degree of heat. These qualities are not found in any other mineral product, and, taken in connection with the ease with which it can be worked and its consequent low price when compared with other materials used for the same purpose, it is really economical as well as highly satisfactory to use slate slabs for sanitary purposes.

The more fully builders and contractors realize the fact that slate has made a place for itself in the interior fittings of the building, as well as upon the roof, the more satisfactory work will they be able to turn out. Slate has the merit and is not endeavoring to obtain a position by favor which it can not maintain by excellence. That this is true is shown by the increased call for mill stock. Builders are everywhere waking up to the fact that, to be up to date, they must use the most serviceable as well as the most economical fittings for their buildings. In the case of the sanitary construction slate fulfills these conditions.

Among the various uses to which slate is put for this purpose are bathtubs, urinals, wash trays, kitchen sinks, dairy uses, drainage, cisterns, grave vaults, etc. For all these purposes and many more the slate is prepared at the factory, according to measurements supplied by the contractor, and all that the latter has to do is to set the slate into place, after it has been set up and fitted at the factory before it is shipped.

Slate used for this purpose can be used either in its natural color or it can be given any color or almost any figure desired. By the process of marbleizing slate all kinds of marble, granite, wood or tiling material can be imitated.



FIRE INSURANCE AND BUILDING.

FIRE INSURANCE, AND HOW TO BUILD. By Francis C. Moore. New York: The Baker & Taylor Co. 1903. Pp. 860. Price, \$5.00.

Mr. Moore has, for a number of years, been a conspicuous figure in the fire insurance world, and has published several books and written many papers on this subject, which he has made peculiarly his own. The present work is his most ambitious contribution to the literature of fire insurance. The book is an exhaustive one, and is both a guide to those in the business of fire insurance and those who own property to be insured. Written by a practical fire insurance man, of long experience and recognized authority, it has a special value in summarizing the present conditions which surround this business and are characteristic of it.

Most property owners are familiar enough with the one aspect of fire insurance that comes before the average man—the payment of insurance rates; but few are aware of the multiform details which must be mastered in the conduct of this business, and fewer still are aware how directly fire insurance affects the building art of our time. One is very apt to consider the architect as the master of the art of building, and such he is to a large extent; but behind the architect are many forces which have no artistic significance, and yet which affect and control building enterprises of all kinds in a most decided way. Fire insurance is one of the most potent of these forces, and almost every page of Mr. Moore's treatise demonstrates how much the fire insurance companies control building and how much they have aided the preservation of human life by insisting on wise construction and careful attention to the exigencies of fire risks.

Starting with some excellent advice on the management of the fire insurance business and the management and conduct of agents, Mr. Moore proceeds to take up questions of exposure and risks and other technical matters connected with his subject. Chapters on fireproof construction, on slow-burning store construction, causes of fires, appliances for extinguishing fires, rates, premiums, water works and pipe distribution, writing policies and special hazards and how to inspect them, continue the development of his subject. The Standard Universal Schedule is given in full, with complete details and explanation of its use.

The book contains a vast mass of useful information, concisely stated and well arranged. The definitions are numerous and clear and distinct. The bearings of construction on insurance and of insurance on construction are explained at length, and the book forms a complete guide to modern building as approached from the position of fire insurance. It is illustrated with many plates and cuts.

ARCHITECTURAL DRAWING. By C. Franklin Edminster, Pratt Institute, Brooklyn, N. Y. Second Edition enlarged. Published by the Author. Pages, 231.

It is a pleasure to commend Professor Edminster's book on drawing, the first edition of which was favorably noted in these pages on its appearance. It is a book prepared by a teacher of wide experience for practical purposes. Each successive plate is a little more difficult, a little more complex, than the one which precedes it, and the student thus advances by easy steps to problems of considerable difficulty. The plates are of convenient size, and the explanations simple and direct.

ARCHITECTURAL STUDIES. By C. E. Schermerhorn, Architect. Philadelphia, 1902. Pages, 162.

A book of illustrations, chiefly from drawings, accompanied with plans of work covering eleven years of active architectural practise. The contents include a number of dwellings of apparent moderate cost, some of which are as well put together and are as picturesque as the small amount allowed for their construction has permitted.

THE ARCHITECTS' DIRECTORY AND SPECIFICATION INDEX FOR 1903-4. Fifth Edition. (New York: William T. Comstock, 1903.) Pp. 144. Price, \$2.00, net.

This is a serviceable list whose value is well attested by its fifth annual issue. Names are arranged by States and towns, and considerable space is given to details concerning the architectural societies, architectural publications and schools. The book is compactly printed and gives evidence of having been prepared with much care.

A RESIDENCE AT ATLANTA, GA.

THE residence which is illustrated on page 100 has been erected for Mrs. Henry B. Tompkins, at Atlanta, Ga. It is designed in the Grecian style, with an ornamented entablature supported on columns of the Corinthian order. It is constructed of cement stucco, smoothly floated, and is left in its natural silvery gray color, while the woodwork is painted in harmony. Dimensions: Front, 72 ft.; side, 80 ft., exclusive of piazza. Height of ceilings: Cellar, 7 ft.; first story, 11 ft.; second, 10 ft.

The entrance is into a vestibule trimmed with mahogany, with the walls and ceilings of the same, beyond which there is a central hall, treated with old ivory white and mahogany. There is a paneled wainscoting in this hall, and also an ornamental staircase with the treads of oak, risers and balusters painted white, and a rail of mahogany. The fireplace is recessed into an angle nook, and has a tiled hearth and facings, and mantel with seats on either side. The reception-room is treated with old ivory white, and it has an alcove with grilled archway and an open fireplace. The drawing-room is trimmed with mahogany, with painted marquetry panels over the doors; it also has a low paneled wainscoting and an open fireplace provided with tiled facings and hearth and a mantel. The library is trimmed with oak finished with Flemish treatment, and has bookcases built in, and attractive alcove with a beamed arch and an open fireplace furnished with a massive mantel. The dining-room is trimmed with San Domingo mahogany and has a heavy frieze extending around the room, from which springs the vaulted ceiling. A very unique treatment of the bay window is made by building in the buffets for china between the windows; the windows in this bay window are glazed with leaded glass of a delicate tint. The den and ante-room are conveniently located, with an outside entrance to porch, the latter forming a very attractive feature of the house. The sewing hall, laundry, and kitchen are fitted with all the conveniences complete.

The second floor is provided with all the modern conveniences, and it contains six bedrooms, three bathrooms, and ample closets. Each bedroom has an open fireplace. The woodwork on this floor is treated with ivory white. The bathrooms have tiled floors and wainscotings, and each is furnished with porcelain fixtures and exposed nickelplated plumbing. A maid's room is also provided on this floor, with a private stairway to the kitchen in the first story. The third floor contains packing rooms, with cedar press and closets, and a trunk room. The cellar, cemented, contains the furnace, fuel rooms, storage, etc.

Mr. W. T. Downing, architect, Equitable Building, Atlanta, Ga.

A BUNGALOW AT SOUTH HAVEN, MICH.

ON page 101 will be found an illustration of a bungalow erected for Mr. A. M. Worthington at Monroe Park, South Haven, Mich.

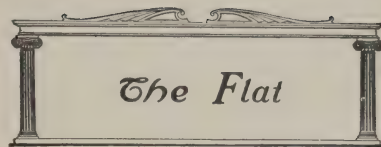
The building rests on cedar posts. The framework is of dressed 2 by 4 studs, which are covered with rough pine boards placed horizontally and lapped same as clapboarding. The space above this siding and cornice is covered with rough cast. The siding is stained a dull green color and the roof, which is covered with shingles, is stained a dull red. Sashes are painted ivory white. Dimensions: Front, 28 ft.; side, 32 ft., exclusive of piazza. Height of ceiling: First story, 9 ft. The plan shows an arrangement of rooms on one floor.

The entire building has casement windows. The living-room and dining-room have ceiling beams; the former has an open fireplace built of field stone, which is laid up at random and is finished with a neat mantel shelf. The kitchen, though small, is conveniently arranged and is fitted with the usual fixtures. There are three bedrooms and a bathroom on this floor; the latter fitted with inexpensive plumbing fixtures. Cost, \$800.

Mr. A. M. Worthington, architect, South Haven, Mich.

COTTAGE WALLS.

MANY different ways, remarks an enthusiast, suggest themselves for treating the walls of a cottage, varying, of course, according to the individual taste and length of purse. Simplest of all are the lining papers at something under twenty-five cents the piece, which give delightful opportunities for broad, flat color, and can be so easily renewed. Whitewash or distemper, with perhaps some bold, but not assertive, stencil decoration, may be turned to very artistic account. Pitch pine paneling makes an excellent wall treatment, and canvas, specially prepared and waterproofed, is much to be commended from a practical as well as decorative point of view. And then, what pretty effects are possible with trellis or old-fashioned chintz papers, providing there is no risk of injuring the colors from damp.



THE NEW YORK FLAT.

BUSINESS is booming, remarked a real estate man, who controls the renting of about two hundred apartment houses on the West Side, between Sixtieth and One Hundred and Twenty-fifth Streets, containing something like 3,000 apartments, ranging in price from \$25 to \$200 a month. There is not a single one of the forty-dollar apartments vacant and we have two hundred of them. In fact, the only vacancies are among the high-priced variety.

We can give a very nice little flat of four or five rooms and bath for \$25 a month, but not, of course, in a first class neighborhood. For \$35 we can do better, and many of our \$40 flats are in an elevator building. The average rent paid in this part of the city for a comfortable apartment, with elevator and all modern improvements, is from \$900 to \$1,000 a year. Above One Hundred and Twenty-fifth Street rents are lower.

The newer apartment houses aim to give more in some respects than those built six or seven years ago, more rooms, and in some cases an elevator; but in other respects they do not improve on the older buildings. As a rule, they are not so solidly constructed, less care is taken to deaden the walls and the rooms are smaller. For a person of quiet tastes to live in one of them is almost impossible.

This, of course, can't be helped. What most people are after in a cheap flat is quantity rather than quality. It is so much easier to store away a numerous family in six small rooms than in three larger rooms; and people with small pocketbooks and large families become inured to noise sooner than some others.

FURNISHED FLATS BY THE WEEK.

THERE are a number of enterprising women, says the New York Times, who are providing furnished flats and apartments in New York City, and make comfortable livings out of their several ventures. They hire the apartments from the landlords or agents, furnish them, and sublet them at a profitable advance. Agents of the high class flats are somewhat shy of dealing with them, because of the class of tenants their methods are apt to invite, but the managers of some of the less pretentious apartments are often glad to make liberal concessions for their aid in keeping their houses full.

One woman has as many as ten flats in houses on the streets running into Central Park West. Another has on her hands all the flats in a large house further west. Their landlords permit them to furnish and advertise all the flats, but rent money is exacted only for those which are sublet, and then only for the period the tenant remains. If he stays but a week, the house owner receives only the weekly proportion of the month's rent. A woman, to hold a privilege like this, must look well after her end of the business and keep the number of her unrented buildings down to a minimum.

Not often are such concessions made. The landlords, as a rule, insist upon having from the speculative women the rent of the flats they furnish whether they are occupied or not. An unoccupied flat eats into their profits. But still they manage to make both ends meet comfortably. A woman will pay, say, \$23 or \$24 for an empty flat. She will curtain the windows with cheap but showy laces and fit it up all through with rugs. Carpets are never used—indeed, nothing that attaches to the leasehold is put in. She plans to have everything she owns in such shape that it can be taken out in an hour. Even the curtains are hung on poles that can be lifted off their rests and carried out on short notice.

The woman lessee has no difficulty in getting \$10 per week for the five-room furnished flat which she rents unfurnished at \$23 per month. If she has good luck and keeps her flat always tenanted, she gets \$43 per month for it, and has \$20 per month left to reward her for the use of furniture that could not have cost her more than \$150 at the outside. In about seven months her profits have paid for the furniture; her earnings have no charge against them after that, except occasionally the rent of an unoccupied flat. A woman with ten flats occupied makes \$200 a month—with nothing to spend out of it except the trifling cost of replacing breakage and repairing.

THE popularity of flat life in the great cities is amply attested by their spread to communities where, a few years since, they were quite unknown. They save steps and are cheaper than whole houses.

THE LONDON TOWN HOUSE: OLD AND NEW.*

PART II.

This applies to their London town houses of the ordinary terrace type. The best work of the Brothers Adam can be seen in their detached mansions, where their skill in the grouping of fine suites of apartments and for producing grand vistas and effects can be seen to most advantage.

The question of fenestration, formerly the keynote to the design and proportion of house fronts, seems in much of the work now being done to be relegated to the background, if not indeed, forgotten in the craze for novelty of arrangement regardless of the position or needs of the rooms.

The lower rooms, although requiring large windows in proportion to their size (particularly in narrow streets) are frequently under-lighted, whilst the upper floors are over-windowed, and the desire for variety is allowed to dominate the whole character of the front. This criticism applies to town house architecture, not blocks of flats, where each floor is almost of the same importance.

The work of John Nash had none of their refinement of detail, although certain qualities of his work, viz., breadth of effect, grouping, and balance, are well worth studying.

Had the terraces of houses in Regent's Park which he erected (Cornwell Terrace was designed by Decimus Burton, but the same feeling exists) been faced with stone instead of stucco, the effect now would impress us in quite a different manner. Indeed, a walk around Regent's Park might convince the skeptical that breadth of effect may yet be obtained with a considerable amount of variety, and there is an element of repose and dignity about these terraces sadly lacking in the work now in general vogue; but this must not be confounded with the deadly monotony of the rows upon rows of stuccoed monstrosities of the Cromwell Road type: "Stuccoed and usually also porticoed, and bearing a gloomy likeness to an array of family vaults awaiting their occupants."

In dealing with recent work it is difficult to differentiate between the characteristics of the plans of various architects, and it would be necessary to devote a special paragraph to the work of each man to bring out these points, but a study of the plans which have been published shows that in later years much has been done to give greater individuality to the plans of even ordinary terrace houses than was formerly the case; but a writer has truly said that, "except in the minority of instances, town houses are not built by the men who inhabit them, and, in rarer cases still, it is where ground values and questions of light and air do not entirely over-rule the esthetic influences of architecture itself." Indeed, most of the best modern work is that which has been done by architects for special clients to meet the latter's particular requirements; further, the site and its surroundings in many cases dictate the general laying out of the plan.

We will now consider the planning of town houses more in detail, and it may be as well to mention that the detached town mansion is not dealt with in this paper. It is in itself a sufficient subject for a very interesting discussion, but general principles can scarcely be laid down when conditions and requirements are so varied.

As a matter of interest, some illustrations of such houses are shown upon the screens.

In the modern town house of the terrace type, whether the frontage be 20 or 30 ft., the problem is much the same; that is, the same number of rooms—in a given locality—will be asked for, the keynote being the relation of the hall and staircase to the rooms. Most people want to enter their rooms direct from the hall or corridors and that the rooms be not "passage" rooms from one part of the building to another.

There is a tendency (upon restricted sites) to omit the morning-room and to enlarge the hall and make it more like a room; there is no doubt a considerable charm in this type of plan and, where the staircase is well treated and is not allowed to take up too much room, the hall becomes a useful lounge. A good fireplace is essential if it is to be so used, and well arranged radiators materially add to the warmth and comfort of the house.

If a staircase from the basement to the outer hall can be obtained, the inner hall is less liable to disturbance by the entrance of servants. Such a plan often permits of side lighting from an area which is most desirable, but usually the space given up to the area is not sufficient—the air is stagnant, and very little light is obtained, the result being again unsatisfactory. If "pairs" of houses can be built the areas become double in size so far as light and air go, and this is a great gain to both houses. Examples are shown with and without.

The usual "Adam" staircase is top lighted, and although in many cases this has been effectively

treated, the great defect is a gloomy hall. This can in some cases be avoided, and in a Harley Street house a window has been introduced upon each half-landing in addition to a good lantern-light—thus flooding the hall and staircase with light and giving ample ventilation, which is not to be obtained by the merely top-lighted staircase. This is a simple solution of the problem, and might be more often adopted with advantage. It breaks up the long shadows cast by the upper flights of stairs and landings, and gives a sense of brightness and airiness which has proved attractive. There is another determinant as to the position of the staircase, and that is the planning of the drawing-room, e. g., first floor. If double or connected drawing-rooms are required, the staircase can not be taken up between the rooms in the ordinary 20 feet to 30 feet frontage; if, however, connected rooms be not required, and the site is sufficiently deep, a central staircase, lighted either from the top, or from an area, or from both can be obtained, and the examples of this type shown are worth studying. A second staircase should, wherever possible, be provided—in the smaller houses, of course, it is not possible—and its substitute, although sometimes practicable, is expensive—it is a small passenger-lift. But unless this can be worked by electricity, and arranged to be used without a special attendant, it is not of much use.

While dealing with the position of the staircases the relation of same to the kitchen is of great importance. In some of the old plans the service appears to have been almost lost sight of, and the labor to the servants must have been immense, and would not be tolerated by the present-day domestic servant.

In the smaller sized house it is not always possible to have a central or even an important staircase, but a well designed one adds to the character of the house, and the very ordinary straight flight may be varied by reversing the bottom steps—*vide* example—and thus, by a little contriving, a position is secured for a fireplace, and the ordinary "passage" effect is avoided.

The rooms upon the ground floor usually required are a good dining-room (and remember that 15 feet in width is the minimum for comfort), a library and morning or own room, and a billiard-room is now more often asked for than formerly. If space be limited upon the ground floor, a billiard-room can often be devised in the basement; but in such cases a staircase separate from the servants' stairs should be arranged so that access can be obtained without passing through the servants' rooms.

The gentlemen's water-closet and lavatory should be upon the ground floor, and well screened.

Passing to the drawing-room floor, we have to decide whether there are to be two drawing-rooms or a single drawing-room and boudoir, with perhaps a guest's bedroom. For the ordinary house a large drawing-room, with smaller back drawing-room, with large doors between and a small boudoir, is a very useful arrangement. If possible a water-closet and lavatory should be provided upon this floor, if a well-screened position can be discovered. If a guest's bedroom be planned upon this floor, a dressing-room and bathroom and water-closet are very desirable, and unless space prevents should be arranged.

The second floor is usually given up to the heads of the family, and ordinary requirements demand a good bedroom with dressing-room (large enough to use as an extra bedroom), bathroom and water-closet, and one or two smaller bedrooms.

The principal staircase can sometimes with advantage terminate on this floor, and the back staircase become the staircase to the upper floors; but it should in such a case be well arranged and of more importance than the ordinary back stair. The drawback to this plan is that it becomes common to the family and servants. A skilful planner can often solve this difficulty, however.

The third floor usually follows the arrangement of the second floor. If there are children to arrange for, then special planning is required, and the accommodation should consist of a large dayroom, two or three bedrooms, bathroom, water-closet, nursery pantry with sink, small larder, linen store, and plenty of cupboard accommodation—and a lift in this case saves much labor.

On the fourth floor the servants' bedrooms, boxroom, cistern-room, and, if possible, isolation-room, should be arranged, with easy access to the roof and from thence to adjoining roofs in case of fire.

Descending to the basement, let us first glance at the plans of some old houses and compare them with those of recent date, and try and discern the reasons for the development. It is a mystery that with the drainage arrangements which existed (or the lack of them) to recent times the death rate of London has been so low. It was until quite recently a common occurrence for the drainage to go into loosely-formed brick channels, very close to the underside of the basement floors and leading to cesspools constructed right under the houses; and in dealing with old houses close search should always be made for open jointed pipes

laid in brick drains and cesspools disused, but full of foul matter.

As previously mentioned, it appears as if no careful study were made of the planning of the basement in the old houses—masses of brickwork, long, dark passages and recesses abound, windows were absurdly small; it seems almost impossible that servants could have lived under such conditions; the very defects of planning increased the staff required to do the work of the house, for dark rooms and passages are almost synonymous with dirty rooms and passages.

Many of the old examples show that the position sometimes selected for the kitchen was about as far from the dining-room as possible, and lifts were not then in use.

The difficulties of the older architects were increased by the necessity of providing laundries and bake-houses which were often placed in the basement. Steam laundries and bakeries have helped to solve these difficulties, and we are able to concentrate and centralize the work and service of the basement to a very great extent. No part of the house will pay better for able planning than the basement.

It will not be necessary to describe in detail the rooms required in the basement, but only to insist that their proper relation to each other and to the upper rooms is of the utmost importance for the economical working of the house.

It was time that the old order gave place to the new, and that the comfort and welfare of the servants be taken into consideration, for without such consideration the comfort of the owners and occupiers must certainly be lessened, and an abnormal staff of servants will be required to do the housework.

The problem of how to adapt old houses such as are here indicated—to bring them, in the words of the house agents, "modernized up to date"—is one often presented to the architect.

By studying carefully how to concentrate the service, by rearranging the rooms, by enlarging the window openings, obtaining borrowed lights and glazed doors wherever possible, many of these old basements can be made light, easy to work, and perfectly healthy; but it is not a task to be entered upon lightly, and will often call for more skill and patience than the average man cares to bestow upon the matter. These exercises are, however, of very great use to the house planner, as from the very defects one learns what to avoid in planning new work.

These are numerous small points that go toward the proper equipment of even an ordinary sized town house; amongst them may be mentioned: Plenty of cupboard accommodation and good linen stores—but see that these are in suitable positions.

A carefully arranged dinner and service lift from the basement to the top floor, if possible, and large enough for coals and ordinary luggage, should be arranged. The well of the back staircase is a good position, but this sometimes is farther from the dining-room than is desirable.

Telephones or speaking-tubes from each floor to the basement save much labor.

Hot and cold water services upon each bedroom floor, and at least two bathrooms, are required in a well arranged house of the class we are considering.

The careful arrangement of the electric lighting to control and to avoid waste must be studied, and the architect is the proper person to arrange these matters, which should be thought of when the plans are being made to avoid trouble and annoyance afterward.

The public health laws must not be forgotten, and the proper arrangement and disposition of the bathrooms, water-closets, housemaid's sinks, etc., if not well considered in planning, lead to trouble and waste of money to an alarming extent.

No doubt all these considerations have added greatly to the difficulties of modern house planning, but by dint of much patience and persistent labor the various offices can be properly and correctly placed and—although we may envy our brothers of the craft who in earlier times had practically solved their problems when the ground and first-floor plans were made—we of this day must face our difficulties and take our pleasure in solving them. We must not be content with a thing that "will do," nor relax our efforts until we feel we have arrived at that happy compromise, the best that can be done "under circumstances of the case." When the plans are all carefully drawn out, then is the time to study in detail the position and size of doors, fireplaces, and windows, to throw light into the dark corners, to provide a proper place for everything, and therefore leave no chance for a thing to be out of its place.

PORCHES are now used for several purposes. The porch sitting-room has long since established itself. The porch dining-room is becoming equally popular where it is possible to have such an open air room, and where climate conditions permit it. The mosquito districts, unfortunately, are not favorable to porch rooms.

* Condensed from a lecture before the Architectural Association of London for the BUILDING MONTHLY: concluded from the October number.



Sanitation

WINDOW AREA AND FLOOR SPACE.

SOME experiments carried out at Cornell University have formed the basis of some interesting deductions on the relations between window area and floor space. The following conclusions were reached:

1. There is to be at least 150 feet of window space for each 1,000 square feet of floor space in rooms which, in use and location, are similar to those described, and are lighted only from one side. Therefore an office 15 feet by 25 feet should have at least 56 square feet of window space, and a classroom 30 feet by 40 feet should have at least 180 square feet of unobstructed lighting surface.

2. The proportion between the height of the window tops and the depth of the room lighted should be at least 500 to 1,000, or, in other words, the distance from the floor to the window tops should be one-half the depth of the room to be lighted.

These figures, says the American Architect, support the old principle that "top-light" is the best; the nearer the window tops come to the ceiling, the more efficient will be the lighting to be secured from a given surface. Care should be taken that overhanging lintels be not allowed to obstruct the light.

A GLASS STREET IN PARIS.

A STREET has been paved with glass, and the Paris newspapers are loud in praise of the innovation. Everybody who heard of the plan laughed at it before it was tried. It was argued that the surface would be too slippery for use and that it would be brittle and dangerous. In practise the pavement is found to afford an excellent foothold and it neither becomes dirty nor absorbs filth. The surface of the pavement is dull. All kinds of glass debris are used in its manufacture and the cost is low.

A SMOKE-WASHING APPARATUS.

THE inventor is Professor Giovanni Mugna, of Forlì, Italy, who claims for his patent that it deprives the smoke of all those qualities which are objectionable, whether from the point of view of health or of cleanliness. It consists of a metal cylinder at the top of which are openings for the ingress and egress of smoke. A vertical shaft runs through the center of this cylinder, carrying on its upper portion a centrifugal fan and near its lower end a "whirler" or paddle. Smoke is drawn from the chimney into the cylinder by means of the fan, and the whirler mixes it with water contained in the bottom of the cylinder. After being washed, the smoke, now almost colorless, escapes from the upper part of the apparatus. This vaporous residue we have not had an opportunity of examining chemically, but the inventor states that it contains only a faint trace of carbonic acid.

The apparatus is worked by a small electric motor of about one horse-power. In a building where some sort of motive power is already in use no special motor is required, and an electric motor can always be used where a continuous current is supplied. The machine itself only requires to be emptied once or twice a day.

WHAT IS BAD AIR?

EVERY one knows, says the London Lancet, that air vitiated by human respiration is offensive and poisonous. In other words, bad ventilation—that is, a condition in which the products of human respiration are not removed—sooner or later produces toxic symptoms. There are usually loss of appetite, discomfort, severe headache, and malaise, which can not be traced to infective organisms any more than the absence of such organisms can explain the curative effects of fresh air. Moreover, it is a common experience that a sojourn in a badly ventilated room occupied by a great number of people predisposes to disease. There seems little doubt that the impurity of the air has some connection with the "catching of a cold." The presence of respiratory products is declared by an offensive smell, and it seems odd that chemical analysis is not able to lay bare what actually the nose readily detects. The effect of bad air upon the health can not simply be that of an offensive smell, though that undoubtedly plays a part. . . . It not only is absolutely devoid of the vitalizing effect of fresh air, but it has also a most sickening smell and sooner or later gives rise to a sense of oppression. What is this poison? It seems to us that the whole question needs a much more extended inquiry than has been hitherto carried out, for surely chemistry and physiology hand-in-hand could eventually elucidate this matter.

RESIDENCE AT WOODMERE, LONG ISLAND.

THE illustrations shown on pages 98 and 99 are those of a residence built for the Woodmere Land Association, at Woodmere, Long Island, of which R. L. Burton, Esq., is the owner. The building is of the Dutch Colonial style, and is constructed of rough-faced stone laid up at random, while the whole is covered with a natural shingled roof. The first story is provided with wooden blinds, and these, together with all the trim, are painted white.

The first floor plan opens in a very spacious manner. There is a vestibule provided with a tiled floor and paneled wainscoting. The trim throughout the house is of white pine, and the whole is painted a china white. The hall contains a staircase of handsome design with oaken treads, white enameled balusters, and a mahogany rail. The toilet is conveniently located, and it has a mosaic tiled floor, marble wainscoting, and porcelain fixtures with nickel-plated plumbing. The drawing, sitting, and dining-rooms form a suite, including the entire frontage of the house. The dining and drawing-rooms have open fireplaces furnished with tiled facings and hearth, and mantels of Colonial style. The butler's pantry is fitted with drawers, dressers, sink, and cupboards.

Special attention has been given to the kitchen, the servants' dining hall, and laundry. Each are furnished with natural oiled trim, and are fitted up with the best modern conveniences. A very important feature of this house, as well as all the houses built by the Woodmere Land Association, is the treatment of the servant quarters, which comprise a servants' dining-hall on the first story, and a bedroom for each servant and bathroom on the second floor.

The second floor contains four large bedrooms, three bathrooms, large sewing-room, and linen closet, besides four servant bedrooms and bathroom. The bathrooms are wainscoted and paved with tiles, and each is furnished with porcelain fixtures and exposed nickel-plated plumbing. The third floor contains many guest rooms, bathrooms and trunk rooms. A cellar under the entire house has a cemented bottom, and it contains a furnace, fuel rooms, cold storage, etc.

Mr. Ernest Flagg, architect, 35 Wall Street, New York.



New Building Patents

The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and foreign Patents.

A PRIVILEGED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

GLASS FACING TILE, etc. E. F. Chance, Birmingham, England. September 1	737,707
TILE. S. T. Playford, Cassopolis, Mich. September 8	738,627
BUILDING BLOCK. B. F. Van Camp, Indianapolis, Ind. September 8	738,643
MOSAIC. P. Semmer, Pittsburg, Pa. September 8	738,704
BUILDING TILE. H. Okaus, Kansas City, Mo. September 22	739,211
TILING. R. L. Chipman, Akron, Ohio. September 15	736,558
FLOOR OR WALL COVERING. F. White, Akron, Ohio. September 15	736,559
PAVING TILES. A. Picha, Ghent, Belgium. September 22	739,345
ARTIFICIAL STONE. M. Cordes, Hanover, Germany. September 29	739,885
DOUBLE WALL BLOCK. G. F. Hagstrum, Chemsford, Mass. September 29	739,858
BUILDING OR ROOFING BLOCK OR MATERIAL. S. C. Davidson, Birmingham, Ala. September 29	740,099
ARTIFICIAL BUILDING MATERIAL. A. Seigle, Lyons, France. September 29	740,188

CARPENTRY.

AUTOMATICALLY OPERATING DOOR. J. H. Whitaker, Davenport, Iowa. September 1	738,134
WINDOW. Eccles & Robson, York, England. September 8	738,424
WINDOW FRAME AND SASH. C. B. Schilling, Chicago, Ill. September 8	739,491
WINDOW. O. M. Edwards, Syracuse, N. Y. September 22	739,404
WINDOW. E. H. Lunken, Denver, Col. September 22	739,431
WEATHER STRIP FOR SASHES. J. B. Scott, Louisville, Ky. September 29	739,981
WINDOW. A. Weingaertner, St. Louis, Mo. September 29	739,960
PIVOTED WINDOW. E. Hipolito, Los Angeles, Cal. September 29	740,015
BASEMENT DOOR APPARATUS. B. Berry and Gale, Los Angeles, Cal. September 29	740,080

CONSTRUCTION.

TRUSSING ARRANGEMENT FOR IRON AND CEMENT CONSTRUCTIONS. M. Druess, Brussels, Belgium. September 1	737,594
METAL COLUMN. J. F. Clutter, Omaha, Neb. September 8	738,163
STRUCTURE OF STRENGTHENED CONCRETE. W. E. Williams, Baltimore, Md. September 8	738,268
BASE FOR PORCH COLUMNS AND COLUMNS. J. B. Schuch, Cleveland, Ohio. September 15	738,850
SKYLIGHT. Lieber and Lambert, Dusseldorf, Germany. September 15	739,013
CONSTRUCTION OF BUILDING. Simpson and Shoemaker, Newark, N. J. September 15	739,030
MOLD OR FORM FOR CONCRETE WALLS. W. A. Kirk, Madison, Ind. September 22	739,549
GREENHOUSE. Construction. F. Rinker, Toledo, Ohio. September 22	739,559

SECTIONAL WALL OR CEILING. J. A. Carter, Summit, N. J. September 22	739,646
METHOD OF MAKING METALLIC COLUMN. J. F. Clutter, Omaha, Neb. September 22	739,650
BUILDING CONSTRUCTION. F. W. Spencer, Albuquerque, N. Mex. September 22	739,737
WATERPROOF CONSTRUCTION. H. Bolze, Hannover, N. Y. September 25	739,820
SUBMARINE BUILDING. R. H. Weisker, New York, N. Y. September 29	739,961
CONCRETE ARCH CONSTRUCTION. W. C. Farmlay, Cleveland, Ohio. September 29	740,039
DEVICE FOR USE IN CONSTRUCTING ARCHES. T. R. Spencer, Oregonia. September 29	740,197

ELEVATORS.

OPERATING MECHANISM FOR ELEVATOR DOORS. F. K. Farsett, St. Louis, Mo. September 8	738,176
FASTENER FOR ELEVATOR DOORS. H. C. Grauer, New York, N. Y. September 15	739,061
ELEVATOR SAFETY DEVICE. G. Hall, Providence, R. I. September 15	739,078
ELEVATOR SAFETY DEVICE. G. Hall, Providence, R. I. September 22	739,782

FIREPROOFING AND FIRE EXTINGUISHMENT.

FIREPROOF BUILDING. Simpson and Shoemaker, Newark, N. J. September 1	737,670
VALVE FOR DRY PIPE FIRE EXTINGUISHING SYSTEMS. F. R. Noss, Rochester, Pa. September 8	737,861
FIREPROOF FLOOR CONSTRUCTION. P. T. Shields, San Antonio, Texas. September 8	738,496
FIREPROOF WINDOW SASH. J. W. Rapp, New York, N. Y. September 8	738,939
FIREPROOF FLOOR AND CEILING CONSTRUCTION. Simpson and Shoemaker, Newark, N. J. September 22	738,950
SYSTEM OF EXTINGUISHING FIRES. Collison and Currie, Atlantic City, N. J. September 29	740,238

HAIRDWARE.

SASH BALANCE. Rathbun and Lonergan, Providence, R. I. September 1	737,867
HINGE. E. C. Hoffman, Cleveland, Ohio. September 1	738,039
BALL BEARING. J. KNOR SHANK, C. J. Caley, New Britain, Conn. September 1	738,096
TRANSOM LIFTER. T. A. Kelly, Chicago, Ill. September 1	738,123
LOCK. Bell and Brown, Devine, Texas. September 8	738,280
SASH LOCK. B. F. Cheshire, St. Joseph, Mo. September 8	738,411
SASH LOCK. H. H. Meyer, Cleveland, Ohio. September 8	738,465
SASH LOCK. M. B. J. Simmonds, Coty, Pa. September 8	738,577
LOCK. H. P. Townsend, New Britain, Conn. September 8	738,759
SASH FASTENER. Broadhurst and Mitchell, Chicago, Ill. September 15	738,766
TRANSOM LOCK. O. Essig, Canton, Ohio. September 22	739,300
SASH FASTENER. G. and J. Goerk, Newark, N. J. September 22	739,410
LOCK. J. H. Hail, Veil, Denmark. September 29	739,667
WINDOW ATTACHMENT. U. S. Hill, Hydepark, Mass. September 29	739,871
SASH LOCK. G. L. Lamb, Nappanee, Ind. September 29	739,883
DOOR STOP AND HOLDER. N. H. and J. F. Nehrer, Topeka, Kan. September 29	739,906
LOCK. G. H. Stout, Denver, Col. September 29	740,060
SASH FASTENER. I. A. Shaw, Hutchinson, Kan. September 29	740,322
ADJUSTABLE BRACE FOR DOORS OR GATES AND COVER FOR SAME. J. H. Shedd, Dallas, Texas. September 29	740,383

HEATING AND VENTILATION.

VENTILATING AND COOLING APPARATUS. J. H. McConnell, Evanston, Ill. September 22	739,438
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MISCELLANEOUS.

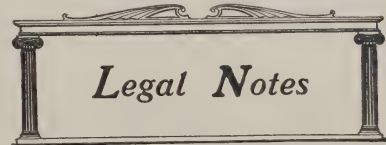
THRESHOLD ILLUMINATING DEVICE. G. Hall, Providence, R. I. September 1	737,608
PAINTING APPARATUS. S. A. Worcester, Springfield, Ohio. September 8	738,270
WALL PAPERING MACHINE. S. R. Crockett, Sr., Vinita, Ind. July. September 22	739,939
MOVABLE PLATFORM LAMINAR FOR BUILDINGS. L. J. Oestreich, Cleveland, Ohio. September 29	740,382

PLUMBING.

FAUCET. J. P. Pigrenet, New Orleans, La. September 1	737,767
WATER CLOSET ATTACHMENT. P. H. Bacon, New Haven, Conn. September 1	737,814
CISEN. J. Nelson, Chicago, Ill. September 1	737,859
SAFETY ATTACHMENT FOR FAUCETS. A. Steele, Ridgefield, N. J. September 15	739,031
ATTACHMENT FOR BATHS, SHOWERS AND LINDS. W. Ford, New York, N. Y. September 15	739,162

TOOLS.

PLANE. A. W. Stanley, New Britain, Conn. September 8	738,000
LEVEL. H. T. Dillon, Henderson, Miss. September 29	738,501
	740,255



Legal Notes

RIGHT TO LIEN.

ONE who furnishes material, under contract, to a person in possession of a tract or lot of land, with which to erect a house or other building thereon, in case such person does not become the owner of the premises, may have a mechanic's lien on such building, separate from the land on which it is situated. Pickens vs. Plattsmouth Investment Co., 48 N. W. 473, 31 Neb. 585. Shull et al. vs. Best et al., 93 N. W. Rep. (Neb.) 753.

PERSONAL INJURY.—NEGLIGENCE.

WHERE a servant was injured owing to the moving of a ladder on which another servant was working, and which was not fastened at the top and bottom, the master was not liable, though it were his duty to see that the ladder was fastened, in the absence of any evidence that the movement was because of the lack of fastening. Fay vs. Wilmarth et al., 66 N. E. Rep. (Mass.) 410.

Publishers' Department

SPARK PLUGS.

SPARK plugs with all parts interchangeable and easily removed and adapted for use with $\frac{3}{8}$ and $\frac{1}{2}$ inch standard iron pipe threads and also for standard French De Dion thread, are made and sold by Arthur R. Mosler, No. 309 Broadway, New York, N. Y. The plug is called the "Spit-Fire," and is designed and constructed with the object of providing improvements in the form and arrangement of electric ignition used in the jump spark method on hydrocarbon motors. It has protected porcelain and sparking points. This covering prevents the oil used as a lubricant from depositing on the exposed insulation of the plug when carried into the compression chamber of an engine in the form of a spray. The protected insulator keeps the oil from reaching the porcelain, and forces this liquid to deposit on the outer surface of the metal casing. The small chamber formed on the end of the plug, having only a small aperture through which the gases are fired, forces an explosion inside of this chamber, allows an earlier spark, and produces the ignition of the entire charge by the projection of fire, through the small opening, thereby igniting the entire charge. The sparking points being protected, removes any possibility of altering the length of the spark by bending the wire while inserting the plug in its place. The center sparking rod is made of a special nickel steel composition. The spark, being formed between the end of this rod and the casing which acts as a condenser of electricity, will cross the gap more easily than in the regular method. Any length of spark can be obtained. With this plug, the spark can be accurately set in harmony with the strength of the battery, condition of the coil and vibrator, thus permitting the acquisition of the desired single and efficient hot spark with a minimum use of the current. The porcelains are reversible, thereby doubling their longevity. The construction of the plug assists the explosion of gases in the cylinder. The small chamber being filled with a charge at each compression of the engine, explodes first and ignites the entire charge. The explosion which occurs in the chamber of the plug has the added effect of keeping the sparking points clean and always ready. The "Spit-Fire" shown in the accompanying illustration will be found to be thoroughly fitted for jump-spark ignition on automobile, marine or stationary gas, gasoline, or kerosene engines.



SPARK PLUG.

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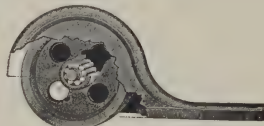
SALAMANDERITE.

A MATERIAL has recently been discovered, and is now manufactured for interior decorative work, that is absolutely fireproof. When this supreme quality is reinforced with properties that make it waterproof, highly decorative, health preserving, and indestructible by use, it may be said that a perfect solution of some important problems of architecture and building has been secured. It is called Salamanderite, a new fireproof paneling and complete substitute for inflammable interior decorative work, and is manufactured by the New Art Decorating Company, Flatiron Building, Broadway and Twenty-third Street, New York, N. Y. All decorative effects realized by the most dainty or massive cabinet work in the costliest woods, or by tiling and other means, can be duplicated at a favorable percentage of cost of the original by the use of this composition. It is composed chiefly of asbestos compressed and chemically treated to render it hard, pliable, and of great tensile strength, and is made in sheets or panels in various thicknesses, sufficient to secure it the recommendatory features of not cracking or warping from the settling of a structure. Finished on one side in fac-simile of quartered oak, mahogany, maple, or any fancy woods, plain or in the most exquisite marquetry and bas-relief effects, it is indistinguishable from the most costly productions. These advantages adapt the material for use for walls, ceilings, etc., of churches, theaters, residences, public buildings, steamer saloons, head linings for railroad

cars, exterior paneling of car bodies, etc., and for kiosks, pavilions and booths at expositions. Fac-simile reproductions of any pictorial subjects, such as still-life figures, or landscapes, are possible on this material for use in theaters, halls, dining-rooms, libraries, and similar interiors. It is also adapted for use on friezes, borders, panels for pilasters, doors, screens, mantels, and trim. Salamanderite is absolutely fireproof by virtue of its basic construction, while the finish is in all cases positively non-inflammable, since oil or oil pigments are not employed. The scientific production of this material, the satisfactory tests it has undergone to show its all-sided effectiveness, whether against the menace of fire and water, or for the advancement of hygiene, economy, and the plastic arts, demonstrate that the building business of the world has an important ally in this new germproof, non-absorbent and moisture impervious substance. The recent Paris subway horror which caused such a fearful loss of life and property, and reduced the immediate earnings of the service by fifty-five per cent. on a system that had to that time been splendidly managed, would never have happened if interior decorations of Salamanderite had supplanted the rapidly combustible material there used. So apparent is this need of using every means to prevent disaster in the underground railway service of our cities, that engineers and capitalists are compelled to consider the use of material that is absolutely safe and at the same time light and ornamental, and in connection with this it is understood that the New York Subway Commission is considering the merits of the New Art Decorating Company's product. Examples of the fine work already done by the company show that the material is well adapted to protect and beautify the details as well as the more imposing features of interior construction.

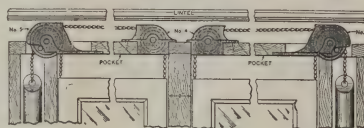
ROLLER-BEARING AXLE PULLEYS.

In selecting a window pulley for description and illustration that will be of interest to builders and those contemplating building, we call attention to an article that is specified by many of the leading archi-



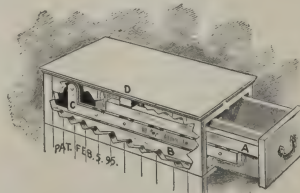
ROLLER-BEARING AXLE PULLEY.

tects of the country. The roller-bearing axle device shown in the accompanying engraving is an overhead window pulley. The housing is made in one piece of iron, which is sufficiently strong to withstand any weight and usage without danger of breaking. The housing connects with the soffit, so that mortar will not clog the wheels. The chain or cord is easily inserted with a mouse, and it is understood that the latter is furnished with all orders. In using this pulley for the heaviest plate glass windows, iron weights may



TWIN WINDOW.

be employed instead of lead, for the purpose of reducing the cost. This roller-bearing pulley is cut in the frame with the regular pulley machine. It is furnished with a lacquered, bronzed, bower barff, and bronze metal faces, and in several sizes. The next illustration shows a twin window, without weights in the mullion, and in the middle section numbered 4 the pulley has a single wheel, and the one numbered 5, to the right, a double wheel, over which the sash is hung with one weight. Only $2\frac{1}{2}$ inches of head room is



DRAWER SLIDE AND SUPPORT.

requisite. The pulley is manufactured by the Grant Pulley and Hardware Company, No. 25 Warren Street, New York, N. Y. This firm is also the maker of the "Turner" anti-friction drawer slide and support, constructed entirely of well selected maple stock, thoroughly seasoned for this branch of work. The most

heavily loaded drawer slides easily when this device is attached to the desk and drawers, and it supports the drawer without sagging when open to the utmost limit. If the drawer is pulled out suddenly, it will not fall from the case. "A" is the top track screwed to the drawer. "B" is the lower track screwed to the case. "C" is the slide unattached, and moves with the drawer. "D" is the stop block placed so that the third wheel comes to the edge of the lower track, as indicated in the last illustration. The Grant Pulley and Hardware Company is the Eastern agent for the "Rixson" door check.

VENTILATING BY WINDOWS.

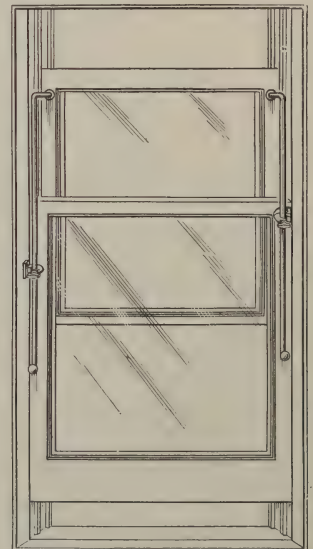
The importance of ventilation can not be overestimated, and to air a room properly at any season of the year it is imperative that the top sash be open, as heated, devitalized or impure air always rises to the top of a room, whence it should be allowed to escape. The suicidal habit of having the bottom sash open



SASH LOCKS.

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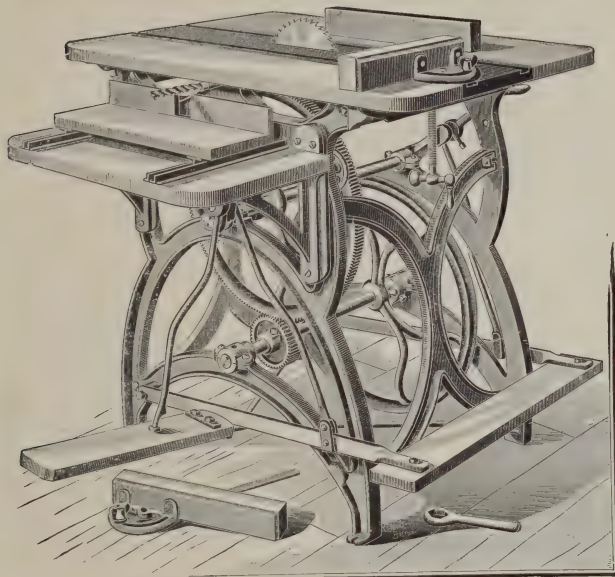
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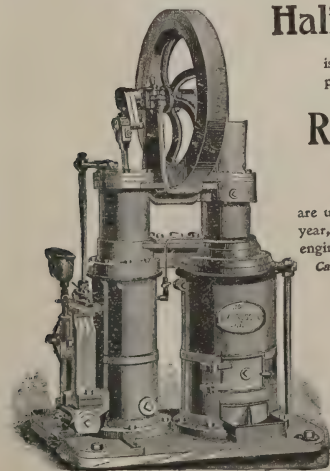
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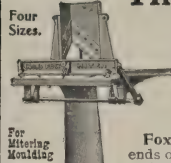
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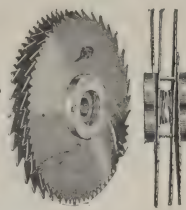
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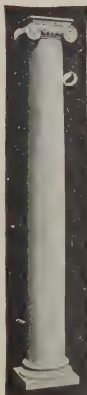
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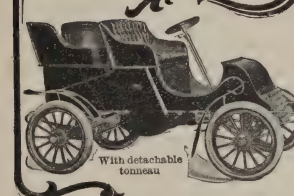
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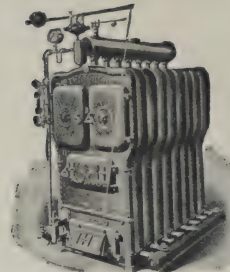
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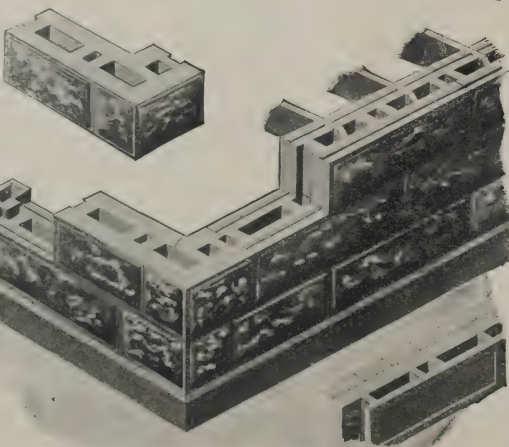
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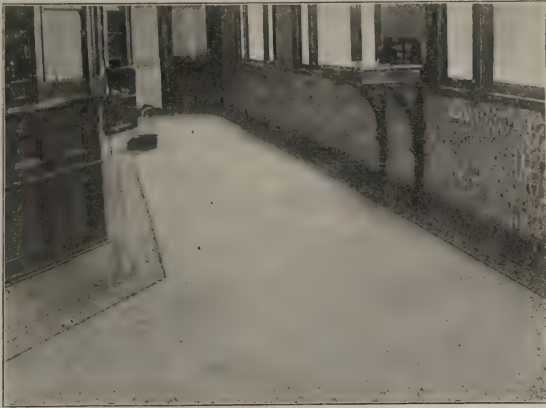
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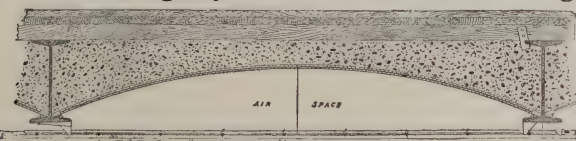
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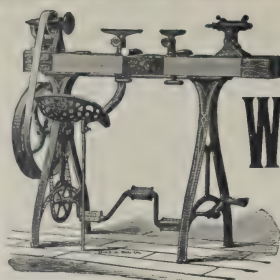
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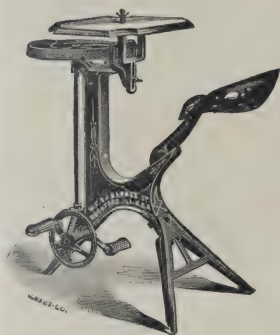
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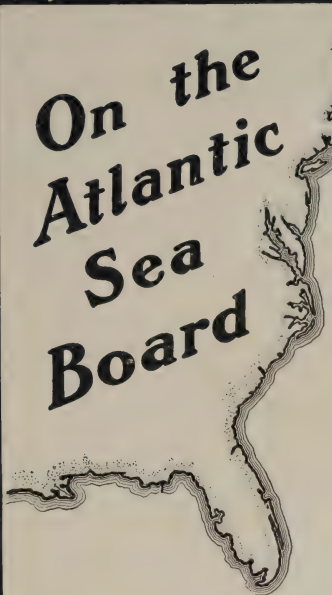
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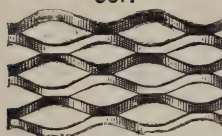
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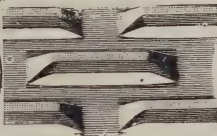
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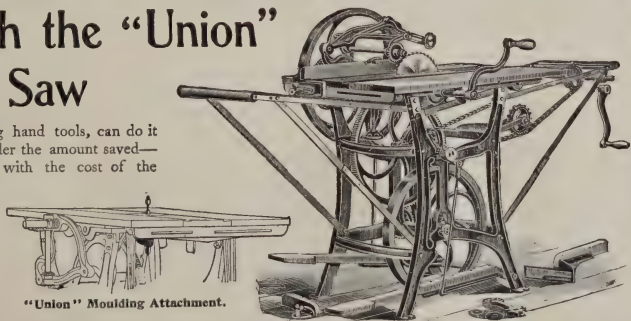
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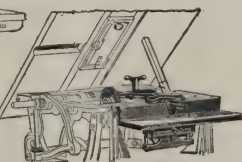
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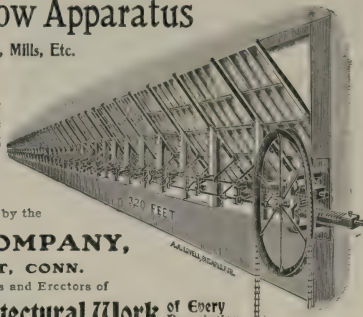
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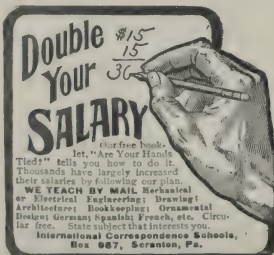


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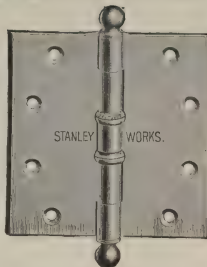
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THE HALL.

MR. W. L. STOW'S HOUSE AT ROSLYN, N. Y.—See page 113.

JOHN RUSSELL POPE, ARCHITECT.

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NEW YORK, DECEMBER, 1903

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. The engravings presented in this issue are made from photographs taken specially for the SCIENTIFIC AMERICAN BUILDING MONTHLY.

MONTHLY COMMENT.

THE BUILDING MONTHLY aims to help its readers to better building. The illustrations reproduce homes and other structures of the highest grade and of varying costs. It seeks to interest the architect, the house owner, the real estate promoter, the home maker, and the builder. It stands for the good and the true and the beautiful in art. Its "Talks with Architects" bring its readers in immediate touch with the leading architects of the day. Its descriptions of houses are brief but compact with information. Its Departments constitute a "review of reviews" summary of current comment, suggestion and help in all matters relating to the construction of the home, its decoration, equipment, and use.

THE poor man who ventures to set up housekeeping has a hard time of it from the ladies who criticize his efforts. Witness the following comments, which have appeared in a daily paper, and which bear unmistakable marks of femininity in their sharpness: A man's housekeeping is never so clean as a woman's, says somebody who is intimate with the inside of numerous bachelors' apartments. This is one reason, the principal one perhaps, why servants like men better. "The house is clean enough for me," says the man. "I don't see any dirt. Why should I look for any?" All of which represents a paradise to the average domestic. But the dirt is there all the same, and typhoid or some kindred disaster is almost certain to overtake the ease-loving, nearsighted bachelor, concludes the wise one. The moral is that it is necessary to live in the desert or be a good housekeeper, even though the right kind of one knows no peace except after hard fighting, and then it is but short lived. "Why, oh, why! do people keep house, if it means only misery?" inquires the as yet inexperienced "dweller in the tents of others." Generations of boarders swell the chorus in reply: "Because anything else in the way of living, this side

of independent incomes, is so immeasurably worse! To eat food you don't like, at hours when you are not hungry; to be talked into a state of mental pulp by strangers when you want to be quiet; to be wholly cut off from the grace of hospitality on your own account; to be at another's mercy, in short, and lead a dog's life, this is—'boarding.'"

THE old-fashioned method of building construction of beginning at the bottom and proceeding in a more or less leisurely or rapid manner to the top has been so long discarded in buildings constructed in the steel skeleton system that it no longer possesses elements of novelty even to the uninitiated. Of course all buildings must have foundations, and the framework must necessarily start from the base; but the actual construction is so largely a matter of filling in walls that this encasing or dressing appears to be the real structure. As a matter of fact the structural elements are the framework, and the filling in is an unavoidable secondary consideration. The framework once up, it is possible to begin at any story, since the weight of each floor is supported by the girders and beams at that point. It has now become quite usual to begin the filling in at any point, and while such a method still has elements of spectacular interest, it is no longer novel.

THE cost of living presents problems of constant interest. It is the real problem of existence. One of the most recent contributions to the difficult subject comes from Harper's Weekly, which assures the anxious New Yorker that his city is the cheapest place to live in in America on a moderate income. This statement, if true, is most interesting, and embodies a fact that is not generally known by the fortunate inhabitants of the metropolis. Yet the author of the article supports his contention by exhibiting photographs of people purchasing cantaloupes at two cents apiece, and similar bargains are described in his text. True enough, this price for cantaloupes is marvelously cheap, and suggests the enormous profits of the high priced restaurants, where fifty cents a melon is not an unusual price. But one can hardly live on cantaloupes, and even the cheapest grades of food becomes tiresome, be their quality of the best.

ORIGINALITY IN DESIGN.

THE search for novelty in design is one of the banes of modern architecture. "Something different," "something new," "something odd," are very common commands given the architect by the newest clients. Now, it is an unmistakable fact that monotony in building is one of the dreariest of architectural attributes. It is a grievance from which the town house has long suffered, and it is only within a few recent years that the drastic remedy of rebuilding the fronts of such dwellings has been undertaken as the only possible remedy for much weary, dreary building in the past. But if monotony has seemed to threaten the town house, the country house has suffered almost as severely from variety and change, from newness and originality.

This by no means establishes the excellence of suburban design; for suburban originality is often very bad and of so strange a variety as to have nothing but its singularity to recommend it. This is equivalent to saying that it has nothing at all; for singularity is not art, and unless a building has an art quality it has no artistic quality and possesses no interest as a building.

On the other hand monotony may be monotonous, but it need not be wanting in dignity; it may have mass, repose, quiet; and any building which possesses these qualities or any one of them has something of art in it, and may well warrant attention, even though it fail to win admiration. The qualities of monotony are negative; those of singularity positive. A monotonous design makes no attempt to assert itself; a singular design is aggressive, pointed, and often impertinent.

Originality is a quality in design quite apart from singularity or monotony; and yet while it is possible to conceive of a monotonous design that is original—for perhaps not all forms of monotony have yet been invented—it is much more apt to be associated with singularity. It is no easier to create a singular design than a monotonous one; but the production of a singular design is seemingly so easy to the architect, and is so joyfully accepted by the client, that it is very apt to be taken by the public as an effort at originality and lauded as something entirely new under the sun. Originality is thus popularly linked with singularity, and in this case popular opinion is not far wrong. It is at least true that the most singular designs now offered to a confiding client have little similarity with existing structures; they must, therefore, be original. It is at least certain that they are apt to be very bad.

But originality and badness in architecture are not convertible terms. In themselves they have nothing

in common; they simply suffer from an unnatural association in the minds of people who really know little of the subject. An original design need have nothing of singularity in it, and it may, on the contrary, be very excellent. The fact that a building is unlike no other building is no architectural crime. Distinctiveness is a very admirable quality in architecture, and is one of the qualities which distinguishes many of the great buildings of the world. It is only when it is allied with singularity—the most unartistic quality of building—that it takes on a special quality of absurdity that robs it of value.

A very wise man once referred plaintively to the paucity of new things under the sun. Had he lived in our day and generation he might have been detected as an observer of things architectural in New York. That proud metropolitan city now boasts replicas or bold derivation of many foreign buildings in a number of notable public structures, among which are the tower of Madison Square Garden—modeled on the Giralda tower at Seville; the Herald Building—reproducing the Palazzo del Consiglio at Verona; the new front at St. Bartholomew's Church—from the Church of St. Gilles in southern France; the new Public Library, which owes its original form to the invention of a French architectural student. A good deal of originality has gone into the making of these modern designs, but they are frankly copies and adaptations.

These structures represent an extreme type, but it is at least certain that many very admirable architectural forms and motifs have already been invented. Many of these are of such exceeding beauty, such wonderful grace, such delicate refinement, that all the art of many succeeding centuries has not been able to improve on them. Only the most egregious self-conceit or downright genius can hope to add to the world's stock of beautiful ideas. The latter appears rarely enough; the former is constantly in evidence and failing in every effort.

When a considerable number of persons are engaged in one calling it is the average that counts rather than the one or two men of real, supreme gifts. The gifted men may raise the average, but they can not lift the work of a considerable number to their own lofty altitude. Such architectural progress as we may make must be achieved by the average architect. And the average architect can not, with safety, depart from the conventional. How dangerous it is to do otherwise is amply attested by a multitude of strange, singular, odd, original structures erected in various parts of the earth and for various purposes.

Originality in modern architecture has definite limits beyond which it is unwise and unartistic to go. But this need mean no artistic limitation. One of the simplest architectural problems is an arched opening with a circle above it enclosed within a gabled roof; yet on this elementary basis the superbly designed and magnificently varied fronts of the great Gothic cathedrals of northern France were designed—fronts both rich and varied, no two alike, yet all containing common elements. With this great historical example before them it is not too much to ask of the modern architects that, within the limits of common sense and good taste, they design house fronts that may be both good and original.

Success in house designing does not depend on originality. A design can not be good if it is commonplace, but it is not necessarily good because it is new, startling, and original. Originality need not even be new, in the sense of being wholly new with every part unknown and unheard of before. Least of all need it be startling or singular, for in a design which is unfortunate enough to possess either of these qualities they become supreme, and the quality of originality becomes the lesser.

But originality in design is not to be looked down upon because neither its scope nor its possibilities are realized by the popular mind. Originality should be encouraged. Copying is to be deplored. Identity in design should be abominated. But the limits of the original should be recognized, and these are not hard to set. The average man must content himself with established forms; these are his stock in trade, these his tools and materials. He must shun the frivolous, the singular, the odd, the bizarre, the strange. He must keep within moderate limits. He must realize he can not go far from the beaten track. He must recognize architectural conventions. He must be alive to the requirements of good taste. He must know a good idea when he sees it, and he must know how to utilize such ideas in a good way. If he is moderate and restrained in his efforts, he will probably exceed his expectations in the execution. If he sets about his work in a good way, with good ideas, with good training, with a well furnished mind, with wholesome ideals, the results are certain to be good. He may not have been as original as he could have been, but he is likely to be as original as he should be. And this is a very admirable result when the end is originality in design.

TALKS ON ARCHITECTURE

BY BARR FERREE.

MR. W. L. STOW'S HOUSE AT ROSLYN, L. I., N. Y.

A DAY with a bit of winter in it—the first real touch of cold weather—was hardly the ideal time to choose to visit Mr. W. L. Stow's fine house at Roslyn, L. I. It happened, however, that this was the only time available, and the sharp, brisk drive up from the station and into the long curves of Mr. Stow's own road—

great marble vases, and other decorative adjuncts. Standing here and looking up, one realizes, if one has not realized it before, that this is a superb mansion, a veritable palace, happily designed, finely placed, and suitably environed. The greensward, which the cold had not yet destroyed, the massive retaining wall of the upper terrace, the balustrade and the enclosing stairways at the ends, the house above, all made an ensemble of stately beauty that few American country houses possess. The general effect here is truly fine, and the impression one of much splendor.

upper floor. Immediately in face, as you enter, is a monumental doorway leading to the hall.

This is a splendid apartment, the largest in the house, occupying more than half of the main building, with four great windows opening on to the south terrace. It is a beautifully designed room, paneled in black oak for two-thirds of its height, the upper part of the paneling being treated with small open arches supported on free columns. Above is a rich damask brocade of deep red. A narrow painted frieze of grotesques runs around the room, and the ceiling is beamed and painted in small squares. The doors, which are richly framed, as are the windows likewise, have rounded tops, with open carved woodwork in the semi-circular panels. At the far end is a monumental chimney piece, with fluted columns, the treasure trove of a Florentine palace, as, indeed, are most of the chimney pieces in the house. Electric lights are hidden behind the top of the wall panels and produce a startlingly beautiful effect when lit.

To the right is the Gold Salon. The walls are hung with old green silk arranged in gilt panels. The rich door frame is also gilt, the color scheme being gold and green. The doorway is Spanish Renaissance. The mantel is plain in design, but beautifully wrought; over it is a portrait of the Duchess of Parma by Sustermann, in a rich old monumental frame. The center of the ceiling is filled with a large painting of the School of Tiepolo, and the room is lighted by crystal lights hanging from the walls. Three rooms on the end of the house open from the hall and adjoin the Salon. The central one is a billiard-room; at one end is a conservatory, at the other a smoking-room; they have no architectural features; the floors are of stone mosaic.

Returning to the hall, one enters the dining-room, which immediately adjoins it, and is nearly of the same size. The floor, unlike that of the hall and parlor, which are covered with hard wood, is stone mosaic. The door frames are of marble, beautifully carved and decorated with rich panels and friezes. Marble pilasters mark off the divisions of the walls, which are covered with green velvet brocade. At the base is a dado of green and black marble; the same material appears in the serving tables or sideboards, each of which is supported by marble pedestals. The ceiling, in green and gold, is decorated with small squares; in the center is a large square painting by Domenichino, the "Youth of Bacchus"; each of the four corners has round allegorical panels, painted by



ways gave but an added zest to the pleasures of a delightful trip. The beautiful Long Island scenery was sparse and bare, but still beautiful; for the coldest of winters is unable to kill the entrancing beauty of Long Island's beauty spots. But it was a cold beauty, not the rich, warm loveliness of the summer season, when Long Island is so seductive to the visitor and the traveler.

The house seemed a bit cold without, as what great white house would not so seem on a coldish day? Surely no more can be said of an Italian palace in such weather in sunny Italy; why not, therefore, an Italian palace on Long Island? For this is exactly what Mr. Stow's home is—an Italian palace adapted to the exigencies of the American climate. Very large it is, and splendidly environed, and best seen from the south, although entered from the north. It is a stately pile, broad and firm in outline, simply designed, and sparsely ornamented, but withal characterized by fine dignity and charm. The main doorway, on the north, is modest enough, and is sheltered by a small glass marquee that flares slightly upward.

But the south side is finely splendid, with a monumental effect truly palatial. Like many Long Island country places the house is built on high ground. On the south it slopes rapidly away from the house, falls quickly, indeed, so that the terrace treatment is at once the most natural and the most effective.

And most happily this has been arranged. A spacious area—I had almost said esplanade—is enclosed within a balustrade, with a flight of steps leading downward at either end. A wonderful space this is, with the great house immediately behind one, the steep cliff—it is almost that—below one, and beyond, the rich farming lands of the near-by estates, and beyond, again, if the day be clear, the view is veiled with the ocean's deep blue. I could not see the water on the occasion of my visit, the trees had lost their foliage, the grass had grown brown; but with all these losses—and they were heavy—the view was still beautiful and entrancing; I should certainly not have wanted to leave it had all the glory of summer been spread before me.

Down below, immediately in the foreground, is a second space, enclosed with a hedge of evergreens. At the foot of each flight of steps is a pair of marble lions, standing on the high pedestals of the balustrade. The upper terrace is now seen to be supported by a wall, carried wholly across the front, the center marked with three great arches. This lower space is a simple formal garden, with old Italian wall heads,



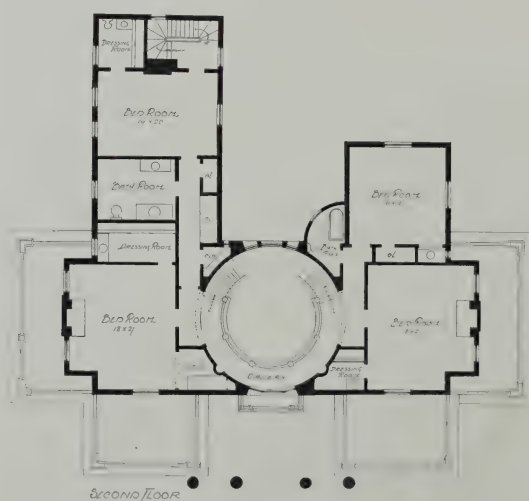
From photographs by Hallett Taylor.

SIERRA CLUB OF SAN FRANCISCO, CAL.—See page 127.

The house is palatial because it is large, handsomely designed, and handsomely furnished. The interior is eminently livable and enjoyable. The rooms are not vast, as rooms in houses of this rank are measured, but are well proportioned to their uses, and the spaces appear to have been judiciously employed. The main doorway leads immediately into an entrance or stair hall, two stories in height—the full height of the house—and lighted above as well as by a window immediately over the door. A splendid flight of stone steps, with an imposing stone balustrade, leads to the

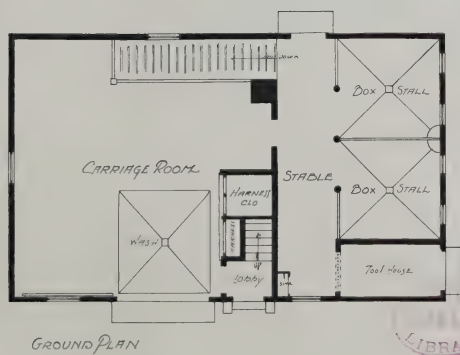
Claudio Francesco de Beaumont. A great standard of electric lights occupies each corner of the room. On one wall is a painting of the "Rape of the Sabines," by Vasari, and a number of old Italian portraits are hung in the adjoining spaces. The high mantel, of marble, contains a large central niche. A small breakfast-room opens out of the dining-room; and then, beyond it, are those solemn apartments consecrated to the service: pantries, a dumb waiter to the kitchen, which is placed below; there are more pantries, store

(Concluded on page 126.)



"ST. HELIERS," MOUNT VERNON, N. Y.—See page 127.

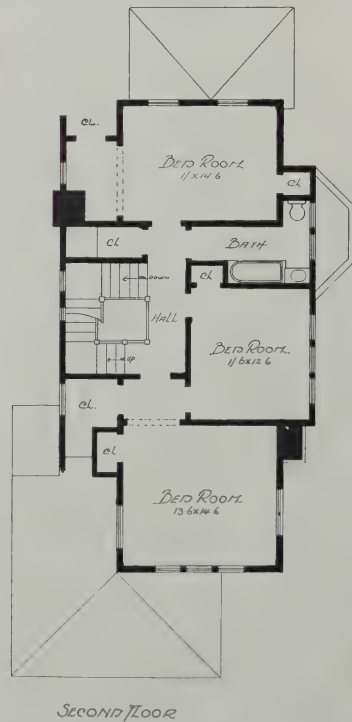
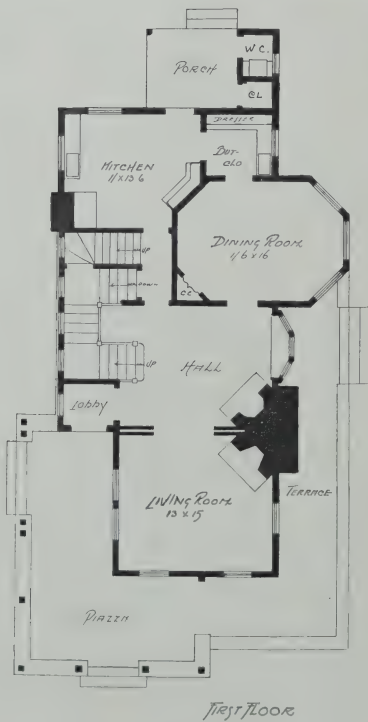
MR. WALTER F. STICKLES, ARCHITECT.



MAIN ENTRANCE OF RESIDENCE.

"ST. HELIERS" STABLE AT MOUNT VERNON, N. Y.—See page 127.

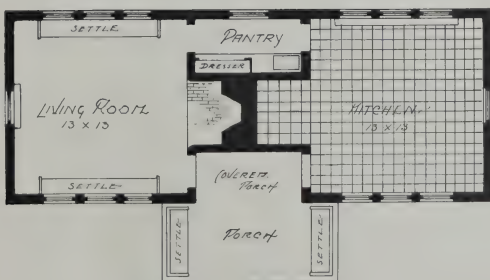
MR. WALTER F. STICKLES, ARCHITECT.



A RESIDENCE IN WESTCHESTER COUNTY, N. Y.—See page 127.
MR. WILLIAM L. PRICE, ARCHITECT.



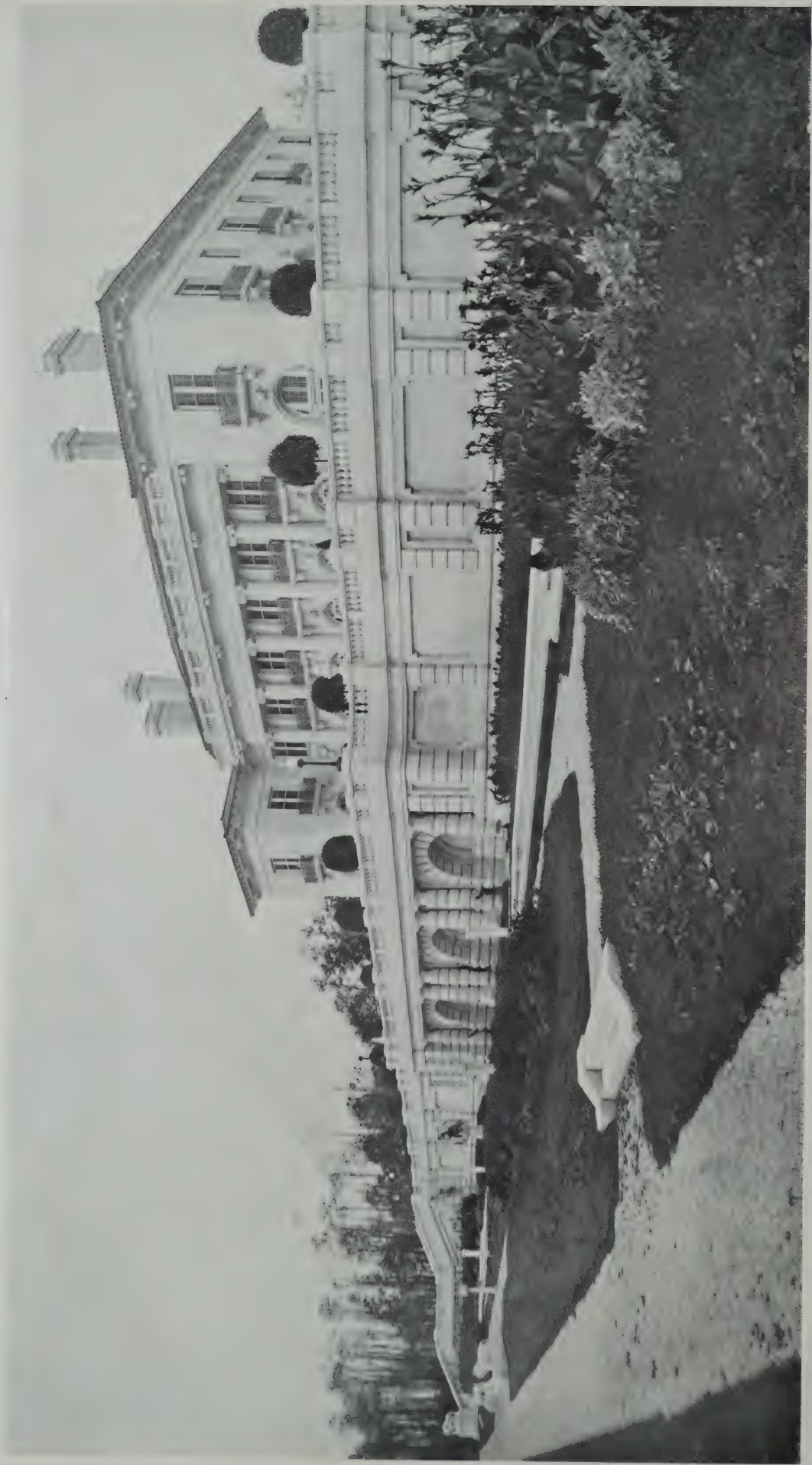
LIVING-ROOM.



FIRST FLOOR



KITCHEN.



TERRACE AND SOUTH FRONT.

MR. W. L. STOW'S HOUSE AT ROSLYN, N. Y.—See page 113.
JOHN RUSSELL POPE, ARCHITECT.





THE GOLD SALON.

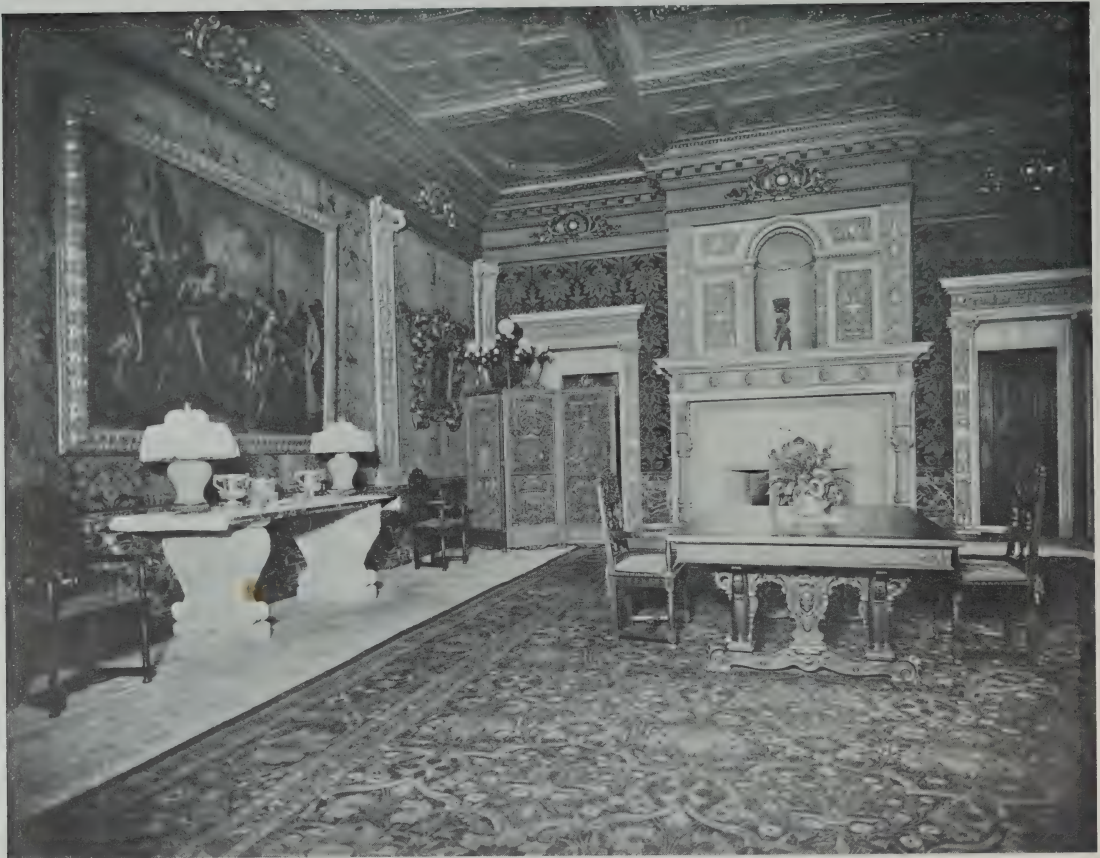


LIBRARY.

MR. W. L. STOW'S HOUSE AT ROSLYN, N. Y.—See page 113.

JOHN RUSSELL POPE, ARCHITECT.





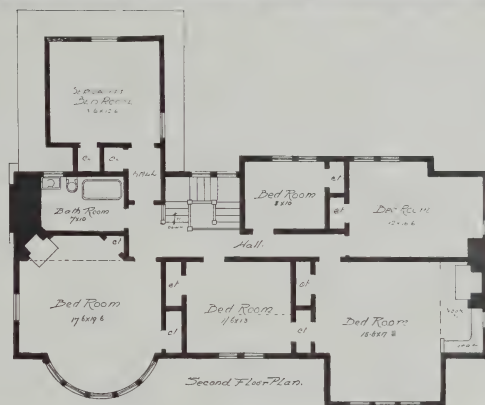
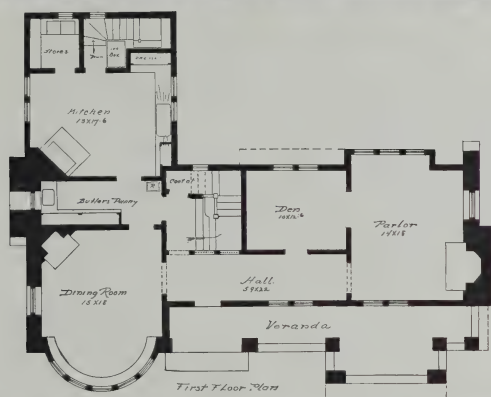
DINING-ROOM.



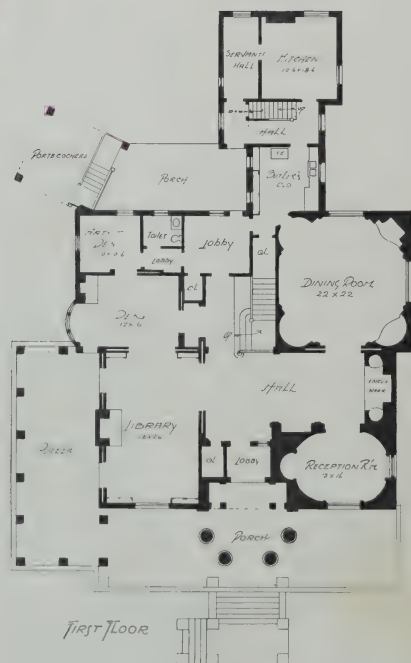
ENTRANCE FRONT.

MR. W. L. STOW'S HOUSE AT ROSLYN, N. Y.—See page 113.

JOHN RUSSELL POPE, ARCHITECT.



A FIELD STONE RESIDENCE AT "LAWRENCE PARK," BRONXVILLE, N. Y.—See page 127.
MR. WILLIAM A. BATES, ARCHITECT.



RESIDENCE OF WILMER L. MOORE, ESQ., ATLANTA, GA.—See page 128.

MR. W. T. DOWNING, ARCHITECT



BYZANTINE COLUMNS.



THE LILY POND.



GENERAL VIEW.



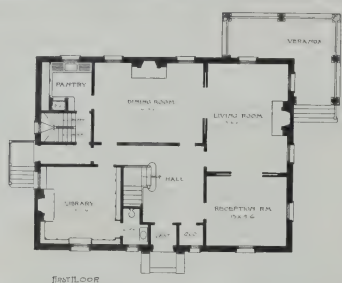
THE CROUCHING VENUS.



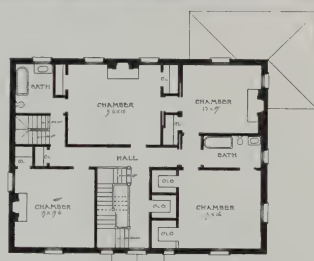
VENETIAN WELL HEADS.



A GARGOYLE.



First Floor



Second Floor



RESIDENCE OF CHAUNCEY PARKER, ESQ., NEWARK, N. J.—See page 127.
MR. JAMES M. A. DARRACH, ARCHITECT.



RESIDENCE OF CHAUNCEY PARKER, ESQ., NEWARK, N. J.
MR. JAMES M. A. DARRACH, ARCHITECT.



RESIDENCE OF FRANCIS SCHOMANN AND DR. SCHOMANN, PELHAM, GERMANTOWN, PA.
MR. LAURENCE VISSCHER BOYD, ARCHITECT.

MR. W. L. STOW'S HOUSE AT ROSLYN, L. I., N. Y.*(Concluded from page 113.)*

rooms, ice chests, servants' dining-room, and other offices all so needful to the inhabiting of the house, and here down below, but with their own opening to the outer world, which the location of the house on a hill permits most conveniently.

To the left of the entrance hall as one enters the house, is the library. It is prefaced by a small recess, from which opens a toilet-room. The walls are lined with bookcases, above which are deep dark oak panels; the plastered ceiling is decorated with geometrical designs. The conspicuous feature of this room is the superb mantel and chimney piece, the richest in the house, magnificently carved with crowded panels in relief, and a veritable masterpiece, brought from Venice. Above it are three consols with gilt busts. The furniture is chiefly old and the walls are hung with old portraits. A goodly portion of the bookcases is given up to Mr. Stow's collection of old blue and white china, which, although not large, contains a number of most interesting pieces. In each corner hangs a large German silver lamp, connected with the electric light.

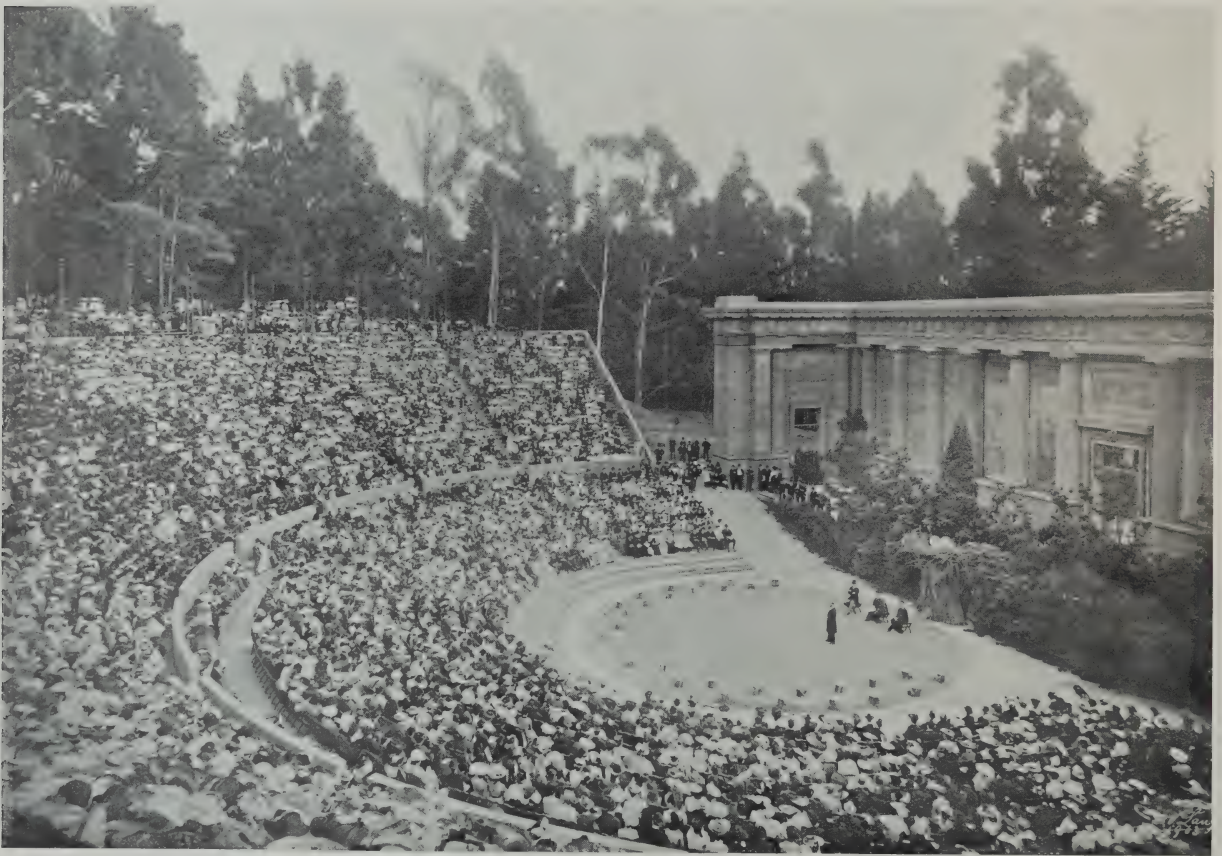
buildings, and dog kennels, by Messrs. Warren, Wetmore & Warren, architects, New York; the landscape works, roads, potager, greenhouse, potting-house, were the work of Mr. Guy Lowell, landscape architect, Boston, Mass.

TWO-FAMILY HOUSES IN THE BRONX.

The favorite location for two-family houses now is in the Twenty-third Ward. A large number of houses have already been erected. Each house is built upon a 25 x 100 foot lot, five feet being left on one side for a side yard, which, with the five left on the adjoining house, gives a yard, extending the whole length of the lot, ten feet wide. The houses are about thirty-seven feet deep, so that a rear yard forty-three feet deep is left in each case. The houses, in this district, built of brick, are of two and three floors. In the first case the basement and the first floor are occupied by one family; in the second, the first two floors. There are also a number of three-floor houses, "American basement," for the occupation of one family only. The majority of the houses are built to sell, not to rent.

**A SPACE-SAVING BEDSTEAD.**

A NEW space-saving bed is described as an upright affair that has none of the objectionable features of the old-time cumbersome wooden horrors that were at one period the pride of the housewife, who had not at that day imbibed the notions of health and hygiene that have since wrought such changes in the furnishing of homes to-day. It is made of brass or iron. It is to be had in single, double, or three-quarter sizes. The single bed is a marvel of compactness. When closed it looks like a shelf about five and a half feet long, less than five feet high, and but eight inches wide. The secret of the shrinking qualities of this bed is that the head and foot are made of sliding bars, like the



CLASSIC THEATER AT BERKELEY, CAL.—See page 129.

By the windows are two marble cherubs and a marble bust on pedestals.

Upstairs the house is filled with bedrooms, boudoirs, and bathrooms, as every well designed and well planned dwelling house must show in its upper story. A great corridor runs through the house from east to west, opening on to the entrance hall in the center, where a small balcony enables one to look down, if one chooses, or across, if one prefers to study the tapestries with which this part of the house is decorated. The bedrooms are all charming apartments, most of them hung with silk or other material, all delightfully furnished, each with its own color scheme and its attendant bathroom. All told, there are eleven bedrooms, two boudoirs, and nine bathrooms on this floor.

The third floor does not appear in the outward design, it being hidden by the cornice and roofing; it is entirely given up to the service and servants' quarters.

HARBOR HILL, L. I., CORRECTIONS.

THE stable of Clarence H. Mackay, Harbor Hill, L. I., N. Y., published in the BUILDING MONTHLY for September, was wrongly attributed to Messrs. McKim, Mead & White, architects. The house gate lodge, and water tower were designed by Messrs. McKim, Mead & White; the coach stable, polo pony stable, dairy, farm

buildings, and dog kennels, by Messrs. Warren, Wetmore & Warren, architects, New York; the landscape works, roads, potager, greenhouse, potting-house, were the work of Mr. Guy Lowell, landscape architect, Boston, Mass.

They range from \$9,000 to \$12,500 in price, and are sold on easy terms, usually with \$1,000 or \$1,500 cash. The buyers are usually mechanics or clerks with an income of from \$1,000 to \$1,500 a year, from which they have managed to save the sum indicated. They pay this down, give a mortgage for the rest, and move into the first two floors themselves. The upper floor they rent for about \$300 a year, which goes a long way toward paying their taxes, interest, and other carrying expenses. They are usually former tenement dwellers, and either move from Bronx tenements into their new quarters or come directly from down town. Frequently they live in a Bronx tenement for a year or two before establishing themselves, merely to look about and satisfy themselves that they will be content to settle down.

IN Paris 887,000 out of 2,570,000 inhabitants live in houses officially classed as containing insufficient space. The door and window tax is still unrepealed. In 1886 there were 219,000 houses in France without a single window.

THE small tenement is the rule in Chicago. Sixty-two per cent. of the front tenements and ninety per cent. of those in the rear are two stories or under.

gates of ferryboats and elevated railroad cars, and close with the greatest ease and the least possible waste of space. The bedstead is practically "folded" when closed, bending in the middle and doubling lengthwise; the head and foot shrink until they measure only eight inches across, and a curtain of chintz, velvet, or silk, which is attached to one side of the bed, is dropped over the whole.

THE DINNER TABLE.

TRY to have the table, as the common meeting place, very attractive to the eye, said a recent lecturer; try to have it orderly, so that the table talk shall not be interrupted by looking for needful articles or by anxious directions to the maid. It is necessary to health and comfort to avoid coming to the table overtired, if possible. The successful mistress of a household has always on hand some subject for good conversation; a cheerful flow of talk helps a meal on wonderfully. Above all, she avoids having troublesome topics or any matter of dispute brought up at meals. People as a rule do not take time enough for their meals; we are always hearing of that American malady, dyspepsia, first cousin to the other American affliction, nervous prostration.

SIERRA CLUB OF SAN FRANCISCO, CAL.

The illustration on page 113 represents the Professor Le Conte Memorial Building, just completed in the Yosemite Valley, California. The edifice was erected by the Sierra Club of San Francisco, and is to perpetuate the memory of the late geologist, who died in the Yosemite Valley two years ago.

The walls are laid in random rubble, and very rough, with no cutting except such as was necessary to line up the window jambs, door heads, fireplace, and shelves. The joints are raked out and exposed on the tops of the walls. The entrance door is of the heavy Dutch style of architecture, and stands at the north end of the building. At the southern end is a mammoth five-foot fireplace and chimney, all laid with solid granite. The flooring is of native mountain pine.

The interior has three rooms, one large and two smaller ones, the latter being used as storerooms and for filing books, papers, and maps for reference by those who care to use this means of familiarizing themselves with the Yosemite and its environs in the high Sierras.

Directly in front of the entrance is a trellis yard walled in and measuring 20 by 12 feet respectively. There are twelve large windows on the sides with double transoms over each for ventilation. In front of the trellis are eleven steps of granite measuring 14 feet in width.

The grounds about the building are left in their natural state and are surrounded by magnificent pine and oak trees with which the valley abounds. A little to the rear the immense granite walls of Glacier Point rise to a distance of 3,200 feet; to the right is Half Dome rising for 5,000 feet above the valley's floor, while the high Yosemite, Vernal, and Nevada Falls are but a mile away.

The building was designed by Mr. John White, of San Francisco, and constructed by Mr. Charles Alsop.

"ST. HELIERS," MOUNT VERNON, N. Y.

On the cover and also on pages 114 and 115 will be found engravings illustrating "St. Heliars," the residence of William Adams, Esq., at Mount Vernon, N. Y. The design is a modern example of the Georgian period. The entire exterior walls of the building are constructed of Portland cement, stucco, and the trimmings are of Vermont marble. The roof is covered with red slate finished with terra cotta hip and ridge rolls. Dimensions: Front, 68 ft. 6 in.; side, 62 ft. 8 in., exclusive of piazza. Height of ceilings: Cellar, 8 ft.; first story, 10 ft.; second, 9 ft.; third, 8 ft. 6 in.

The hall is a central one, is circular in form, and is provided with a group of columns supporting an open well which rises to the third story. The staircase opposite the entrance starts with one short run to a platform, from which the stairs divide, rising in either direction to the gallery in the second story. This staircase is lighted effectively by stained glass windows. The vestibule has a columned effect, and a tiled floor. On either side of the vestibule there are alcoves with paneled seats. This hall is trimmed with quartered oak, and it has a paneled wainscoting and ceiling beams. The billiard-room, which is placed beneath the balcony and in the basement, is trimmed with quartered oak, and it has a three-foot paneled wainscoting and a beamed ceiling.

The drawing and music-rooms are trimmed with mahogany, and each is separated one from the other by columns and a balustrade, which is placed two steps up from the level of the drawing-room floor. The fireplace alcove is separated from the drawing-room by similar columns. The fireplace has Mexican onyx facings and hearth and a mantel of Colonial design.

The dining-room is trimmed with quartered oak, and it has a high paneled wainscoting, ceiling beams, and china closets with leaded glass doors built in at either corner. The fireplace has marble facings and hearth and a massive mantel. The two columns supporting the massive beams form a feature of this room. The conservatory, opening from the dining-room, is also an attractive feature. The butler's pantry is well fitted with china closets, sink, drawers, dressers, etc. The kitchen, of large dimensions, is fitted with all the best modern conveniences.

The entire second story is treated with white enamel, and it contains four bedrooms, four dressing-rooms, provided with wardrobes and lavatories, and two bathrooms, the latter furnished with a tiled wainscoting and floor and porcelain fixtures and exposed nickel-plated plumbing.

The third floor contains the servants' quarters and ample storage room. The cellar, cemented, contains a laundry, cold storage, furnace, and fuel room. Mr. Walter F. Stickles, architect, 205 Post Office Building, Mount Vernon, N. Y.

"ST. HELIERS" STABLE AT MOUNT VERNON, N. Y.

The illustration shown on page 115 presents a stable which has been erected for William Adams, Esq., at Mount Vernon, N. Y. It is designed in harmony with

"St. Heliars," the residence of Mr. Adams, which is illustrated on the cover and pages 114 and 115. The exterior walls are built of Portland cement, stucco, and all the trimmings are painted white. The roof is covered with shingles and is painted an Indian red. The walls and ceilings of the interior are covered with matched stuff finished with hard oil. The carriage room has a carriage wash and harness closets. The stable contains two box stalls and a tool house; the former have the usual ornamental iron fixtures, etc.; each is cemented, with a sanitary drain. The second story contains the coachman's quarters and ample storage space for hay, feed, etc. There is also a cellar under the entire building. Mr. Walter F. Stickles, architect, 205 Post Office Building, Mount Vernon, N. Y.

A FIELD STONE RESIDENCE AT LAWRENCE PARK, BRONXVILLE, N. Y.

The field stone residence which is illustrated on page 121 has been erected for Frank I. Whitcomb, Esq., at Lawrence Park, Bronxville, N. Y. The underpinning and first story are constructed of field stone laid up in a rough manner, and without showing much of the mortar joints. The remainder of the building is coated with stucco of a light gray color. The roof is covered with shingles and is stained a deep Venetian red, quite in harmony with the remainder of the building, the trimmings of which are painted a dark bottle green. Dimensions: Front, 58 ft.; side, 47 ft. Height of ceilings: Cellar, 7 ft. 6 in.; first story, 9 ft.; second, 8 ft. 6 in.

The hall is treated with ivory white and has a staircase separated from the hall proper by columns, in the spaces between which there are spindle-work screens. This staircase is turned out with Colonial balusters and a cherry rail. The reception-room is treated in the Louis XV. style, with paneled wall decorations designed in that period. The living-room is treated in Flemish oak, and it has bookcases built in, paneled seat, and an open fireplace built of Roman brick with the facings and a hearth of the same and a mantel. The dining-room walls are treated with green, and the trim is painted old ivory white. It has a semicircular bay with seats and an open fireplace built of Roman brick, with the facings and a hearth of the same and a mantel of Colonial design. The butler's pantry is trimmed with hard pine, and it has a sink, and a china closet, drawers, etc. The kitchen is trimmed with hard pine, and it has a range, sink, store pantry, dressers, and all the modern conveniences.

The second floor contains five bedrooms, seven closets, linen closet, and a bathroom; the latter is furnished with porcelain fixtures and exposed nickel-plated plumbing. The servants' quarters are located over the kitchen extension. Mr. William A. Bates, architect, 100 Broadway, New York.

A RESIDENCE IN WESTCHESTER COUNTY, N. Y.

The residence which is illustrated on page 116 was built near New York, from plans prepared by Mr. William L. Price, architect, 731 Walnut Street, Philadelphia, Pa. The underpinning, balustrade to the piazza and terrace, and the chimney are built of red brick laid in red mortar. The first story is beamed, and the panels are filled in with stucco and pebble dashed, while the beams and all trimmings throughout are painted a deep red. The second and third stories are covered with shingles and are stained yellow. The roof is covered with shingles and is finished natural. Dimensions: Front, 45 ft. 8 in.; side, 28 ft. 6 in., not including piazza. Height of ceilings: Cellar, 7 ft.; first story, 9 ft.; second, 8 ft.; third, 8 ft.

The interior is trimmed with whitewood and painted old ivory white throughout, with doors finished in mahogany. The hall contains an ornamental staircase, treated the same as the trim, except the hand-rail, which is of mahogany. The fireplace is built of Roman brick, with the facings and a hearth of the same, and a mantel of Colonial style. On one side of the fireplace there is a bay window with seat. The living-room has a similar fireplace. The dining-room is octagonal in form, and it has a corner china closet. The kitchen is well provided with a sink, dresser, range, and a large butler's pantry fitted with sink, drawers, dressers, etc.

There are three bedrooms and a bathroom on the second floor, besides ample closet room and a linen closet. The bathroom is furnished with porcelain fixtures and exposed nickel-plated plumbing. The third floor contains two bedrooms and ample storage space. A cemented cellar contains a laundry, furnace, and fuel rooms.

A CHILD'S PLAY HOUSE AT CEDARHURST,

L. I., N. Y.

Do not, for a moment, imagine that a child's play house and a doll's house are identical. Play houses both of them are; but one is a house to play in, and the other a house to play with. The difference between night and day is not more striking.

The luxuries provided for the amusement of modern

childhood are so rich and varied, and have, for so many years, exhibited a constant tendency toward luxury, that a play house built expressly for children, a mimic house, equipped with much of the furnishings of a larger house, big enough for the children, perhaps too small for the grown-ups, could not be long in the coming. And why not? Nothing is too good for the child if the parents can afford it, and a dear little house for the dear little ones is surely the most luxurious of gifts, and one well calculated to instill ideas of home life, comfort, care, and beauty which few other toys are capable of.

The child's play house illustrated on page 117 is a very interesting and fine example of the small house built for the child. It was erected on the estate of R. L. Burton, Esq., at Cedarhurst, L. I., N. Y. It is constructed of stucco of a pure white color, with white trimmings, and the thatched roof with its red tiled cresting at ridge lends an effective tone to the whole scheme. The chimney is also an attractive feature. The porch has a floor laid with irregular flat stones, and a high-back settle on either side of the entrance. The kitchen has a floor paved with eight-inch Dutch tile and a wall formed with timbers exposed to view, and which are stained a soft brown color. A part of the walls have a wainscoting of rough brick placed between the studding with artistic effect. The kitchen has a range, and is supplied with hot and cold water. The pantry is treated with white enamel, and it has a sink, drawers, dresser, etc. The living room is also treated with white enamel, and the walls are covered with an attractive design in tile paper. It contains an open fireplace with brick facings and hearth and an overmantel with cabinet, provided with strap hinges of wrought iron, and high-back settles. This living-room is furnished with old-fashioned mahogany furniture and some fine pieces of old blue Ridgeway ware. Mr. Charles Barton Keen, architect, 1604 Chestnut Street, Philadelphia, Pa.

RESIDENCE OF CHAUNCEY PARKER, ESQ., NEWARK, N. J.

On page 124 will be found illustrations of the residence of Chauncey Parker, Esq., on Mount Prospect Avenue, Newark, N. J. The building is designed in the Colonial style, with classic detail. The exterior walls are built of Harvard brick laid with a Flemish bond, and the trimmings are of white marble. The whole is surmounted with a massive wooden cornice which is painted white. The roof is covered with white cedar shingles finished natural. Dimensions: Front, 50 ft.; side, 37 ft. 6 in., exclusive of piazza. Height of ceilings: Cellar, 8 ft.; first story, 10 ft.; second, 9 ft.; third, 9 ft.

The entrance doorway is very fine in its detail, and the door itself is glazed with delicate tinted glass. The vestibule is trimmed with white pine treated with white enamel, and it has a paneled wainscoting and hardwood floor. The hall is square in form, and it is trimmed with white pine treated with white enamel. The staircase is of handsome design, and it has spindle balusters and newel posts, all treated with white enamel, while the rail is of mahogany. A feature of this hall is the cluster of leaded glass windows which are placed in the partition between the hall and the dining-room, and which form an extended effect and also good ventilation. The reception-room is trimmed with pine and is treated with china white enamel. The living-room is treated the same, and is provided with an open fireplace furnished with tiled hearth and facings, and a mantel of classic design. The dining-room is trimmed with birch, and is stained and finished in mahogany, and it has a paneled wainscoting, and an open fireplace furnished with a tiled hearth and facings, and a mantel. The library is trimmed with birch and is stained and finished in mahogany. It has book cases built in and extending around the room, paneled seats, and an open fireplace furnished with porcelain tiled hearth and facings and mantel of Colonial style. The rear stairway and butler's pantry are well located, and the latter is fitted with sink, dresser, drawers, and a dumbwaiter to the basement.

The second story is trimmed with white pine and treated with white paint. This floor contains four large bedrooms, provided with large, well fitted closets, linen closet, and two bathrooms, furnished with porcelain fixtures and exposed nickel-plated plumbing. There are four bedrooms and ample storage room on the third floor. The cellar, a basement, contains a kitchen, pantry, laundry, storeroom, furnace, and fuel rooms. Mr. James M. A. Darrach, architect, 1133 Broadway, New York.

DOORWAYS.

Two examples of recent doorways are given on page 125. One is from the residence of Chauncey Parker, Esq., at Newark, N. J.; the other is the office entrance of the residence of Francis Schomann and Dr. Schomann, Pelham, Germantown, Philadelphia, Pa., designed by Laurence Visscher Boyd, architect, Philadelphia.



WINTER FOLIAGE.

THERE is great beauty in the mere trunk and branches of a well shaped tree, points out the Canadian Architect; and to have this before the eye in winter, especially when, seen through a window, the ramifications form, as it were, a decorative pattern, running through the panes of glass and crossed by the sash bars, would be sufficient reason for having trees in a garden if there were no such thing as foliage. But when the time comes for the foliage to break out, it always seems to be a little better than we expected, and we look forward with regret to the time when it will fall again. As a matter of fact, the thing which particularly surprises us always is the abundance of the foliage. It is only by noting in one spring the extent to which the full sized leafage surpassed our expectations that we can be prepared for what to expect when summer comes again. This should be the cure for the discontent of winter; for the green gloom which we enjoy in summer would be an uncomfortable surrounding to a house in winter. But a green object that casts no gloom is as good in winter as in summer. What is wanted is an evergreen tree of some sort that does not grow too large and is not too funereal.

SUCCESS WITH FLOWERS.

PEOPLE talk a great deal about the "magic touch" with flowers, remarks a contemporary, as if it were some especial power that certain individuals possess and others totally lack, the so-called virtue really consisting in common sense and intelligent appreciation of the needs of the different plants, combined with a sufficient love of floriculture to induce one to spare the time necessary for the proper care of plants. Palms, for instance, and house ferns which have lasted fairly well during the winter, and which one would naturally expect to flourish much better during the summer, have a way of turning brown at the points and being sulky about leafing, much to the surprise and disappointment of their owners, who can not see why they should grow in the artificially heated atmosphere of a house and become sickly in the open air. A woman of much experience in such matters always changes their pots in the spring, giving them fresh, rich earth and more room. She never lets the dry, hot air of summer strike directly on the pots, but puts the latter in a tub or larger vase and fills the space in with sphagnum moss, with a little more of the moss around the roots. This is always kept wet.

SMALL HOME GROUNDS.

THERE is no greater fallacy than to imagine that much space and ample means are necessary to the possession of a garden. Most desirable both of these qualifications unmistakably are, and very beautiful, sumptuous and delightful are the results from their possession. But a very great deal of satisfaction can be had from small grounds, and it needs only care, attention and taste to obtain most satisfying gardens. A succession of small gardens, opening onto a street, will be as pleasant and as delightful as many a larger single garden. It is seldom that uniformity of taste and care can be obtained, but a slovenly neighbor should not deter a more ambitious householder from doing the best he or she can. Every garden helps in giving pleasure.

POTS FOR HOUSE PLANTS.

NOTHING is better for pots for house plants, says a keen observer, than a tin can in which have been made openings for drainage. The old idea, that a porous pot is best, has been abandoned by persons who are most successful. With the porous or clay pot evaporation is more rapid at the sides than anywhere else, the earth there becoming hard and dry, and the tiny feeding roots are liable to be impeded in their work. By painting the porous pots this defect may be overcome. The painting should be done while the pot is new. If it is painted after it has been used the paint will peel from the pot easily.

ELECTRICITY AND TREES.

THE high resistance offered by trees and plants in general, says a government report, serves as a protection against death from an electrical contact. The least resistance in trees occurs in the vital layer (cambium) and those tissues adjacent to it. Electric currents of whatever nature, when applied to plants of a certain intensity, act as a stimulus. The physiological effect of the direct current on vegetable life differs from that of the alternating; the latter current acts more as a stimulus to the plant than the former.

RESIDENCE OF WILMER L. MOORE, ESQ., AT ATLANTA, GA.

THE residence of Wilmer L. Moore, Esq., which is illustrated on page 122, has been erected at Atlanta, Ga. It is treated in the Georgian style with fluted Ionic columns supporting the portico at the front. It is built of buff brick with white marble trimmings; the frieze is of terra cotta and the cornice of wood. Dimensions: Front, 57 ft.; side, 95 ft., exclusive of piazza and porches. Height of ceilings: Cellar, 7 ft.; first story, 11 ft.; second, 10 ft.; third, 8 ft. 6 in.

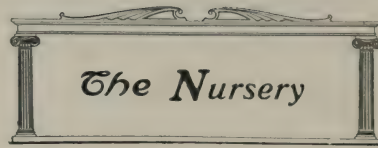
The vestibule is trimmed with mahogany, and it has an outside door in one panel and an interior door of one panel of beveled plate glass. The hall is trimmed with birch and treated with a white enameled finish of old ivory. The ceiling of this hall is vaulted, and it has pilasters extending from the floor to the ceiling, and finished with carved capitals, and from these carved capitals extend into the vaulted ceiling, making lunettes in which are paintings outlining the different elements. The fireplace in the end of the hall is in an angle nook, the fireplace being large enough to admit four-foot logs. This entire angle nook is finished in small green tile, the shelf being of Antwerp oak, surmounted by twelve carved heads of different design. In the recess on either side of the chimney are two small windows with crimson leaded glass. The arch separating this from the hall proper is of red Numidian marble. The staircase is finished in old ivory white, the newels being designed in the form of a carved lion's head, and the balustrade is a continuation of the wall balustrade, projecting where steps appear and supported by carved heads. This extends into an arcade to the ceiling of the second floor, with square columns supporting the vaulted dome. The platform on the stairs is a semicircle with balustrade in front with openings outlined by carved work. At the head of this platform is a very large leaded window of light amber glass, having window seat, with niches on either side for statuary. At the right of the platform, and at about an elevation of six feet from the floor, are two openings supported by a shelf with carved heads under the same, finished in old ivory white, and forming an access to the back hall. The walls of the hall are finished in a deep shade of apple green.

The reception-room is oval in shape, and is finished in old ivory white. The library is trimmed with golden oak, and its walls are paneled to the height of six feet from the floor, and it has a beamed ceiling. Book cases are built in, and an open fireplace is furnished with a tiled hearth, Numidian marble facings, and a mantel handsomely carved. The walls are dark ecrú. The den and antedean are trimmed with smoked ash, and the walls are paneled nearly to the ceiling, the latter being checker board, alternate squares of wood and plaster, the plaster being a dark cream with side walls of crimson. The rear entrance hall from the porte-cochère and toilet are conveniently located.

The dining-room is circular in form, and is trimmed with mahogany. It has a paneled wainscoting and a domed ceiling. The four corners of the room are provided with alcoves, one of which contains a fireplace, another a china closet, and another the entrance into the butler's pantry. The finish of the wall of the dining-room is green. From the center of the ceiling there is a large circle of electric lights surmounted by conventional griffin heads, being sixteen in number, and from this the ceiling is domed, being upheld by a cluster of five columns, eight in number. The double doors of the entire lower portion of the house are single paneled, the finish of the doors of the hall and dining-room being of solid mahogany. The door immediately beneath the platform of the staircase leading to the right of the main entrance is also a large beveled edge mirror glass to match the one on the left of the door which leads to the vestibule. The butler's pantry, kitchen and its dependencies are fitted up with the best modern conveniences.

The treatment of the second floor is simple, being provided with cream white painted trim, mahogany doors, and brass hardware. This floor contains five bedrooms, one dressing-room, two bathrooms, linen closet, trunk room, and servants' room. The bathroom is tiled, and it contains marble showers and enameled tubs, porcelain fixtures, and exposed nickel-plated plumbing. The third floor contains ample storage space. The cellar contains furnace, laundry, and drying-room, fuel rooms, etc. The entire house has hardwood floors. The finish of the hardware of the hall is frosted nickel, the dining-room bright brass, the den and library a dull brass. Mr. W. T. Downing, architect, Atlanta, Ga.

In 1840 twenty per cent. of the people in Liverpool lived in cellars. In Birmingham, beginning in 1876, ninety acres of slums, containing 16,596 people, were pulled down and rebuilt at a cost of \$3,500,000. In 1880, 117,702 people in Berlin lived in cellars. This condition of life is now much improved by the good results of rapid transit lines to the suburbs.



THE PLAY CUPBOARD.

THE play cupboard is one of the essential equipments of a well arranged nursery. As its name implies it is a place for keeping playthings, and it has a useful purpose in helping the child to understand the value of putting things away after they have been finished with. This lesson is so difficult to learn that many people never master it after years of misdirected effort; the play cupboard as a device for teaching it early has, therefore, a high ethical value. Various devices have been proposed for this useful nursery adjunct. A triangular corner cupboard, which may be reached by one or two small steps below it—in themselves useful bases for play—is one form; another is a simple hanging cabinet, placed not too high up on the wall; a third is a large built-in closet, which must be especially erected in the nursery, and is provided with several shelves, forming, in a sense, a mimic play house, which may be lighted by a window. These cupboards may be closed with glass doors, although a better form is likely to be wooden doors gaily decorated with the picturesque designs now so popular for rooms used by children.

A MODEL NURSERY.

A MODEL nursery shown in New York not long since contained a number of features of special interest. The crib had a hair mattress and pillow instead of feathers or down. This, as well as the bassinet, is on a standard, to avoid a mother's stooping. A folding rubber bathtub, also raised from the floor, is considered far preferable to those of porcelain—more easily carried about and never cold to the touch. A small table with a glass top, shelf, and iron standard, on rollers, was another comparatively inexpensive adjunct of the modern nursery. It held all the accessories in the infant's feeding and care—aluminum double boiler and saucapan, asbestos mats, glass pitcher, glass measure, nursery icebox, dairy thermometer, safety matches, and various sizes of spoons, glass jars, etc. The table and its belongings are to be kept exclusively for the preparation of the child's food. A small convenience is a night clock which can be attached to the gas burner, where the smallest flame sufficiently illuminates its face. The furniture was of wicker or prairie grass, light in weight, easy to clean and artistic.

The walls were covered with a coarse weave canvas or burlap, enamel painted in some soft, enjoyable tone. This can then be washed, or taken down and shaken, with comparative ease. Simple rugs or some inexpensive floor covering, which can be readily and frequently renewed, is far preferable to carpets. White, easily washed curtains draped the windows, but could be drawn back, to let in all the light and sunshine. A sand table and blackboard are necessary for the children of to-day; also some of the simpler kindergarten gifts and games.

THE MODERN NURSERY.

THE modern nursery in the largest houses is an extensive suite of rooms, at least three in number, including a sleeping-room, sitting-room, and bathroom—a separate room for each separate thing. These are connected with the mother's bedroom and boudoir, and communication with the kitchen is maintained by bells and speaking tubes. All these rooms are well lighted and daintily furnished. The sleeping-room is often of generous size. Delicate colors are the present favorite vogue.

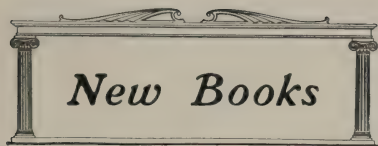
THE WEIGHING BASKET.

THE weighing basket is a feature of every up-to-date nursery in these days of modified milk and weekly weighings. It comes in a pretty white wicker basket, securely fastened on the top of compact little scales. The baby's washstand is another enticing bit of nursery furniture for the toddler. It is the height of a kindergarten table, and has the most proper little bowls, set in an opening, with soap dishes and sloop jar, all covered with seductive Kate Greenaway figures.

PICTURES FOR THE CHILD'S ROOM.

COLORED pictures of birds and flowers, says a recent writer, are admirable for a play-room, and readily awaken a love for natural science. So soon as there is love for nature, there is a desire for the intimate personal knowledge which is of most value to a growing mind. It is living knowledge which books may nourish, but do not always arouse.

It is well to have pictures so framed that they can be changed at will. If there is not much money to spend on frames, pictures may be used freely on the walls of a play-room without framing.



New Books

THE CARE OF A HOUSE.

THE CARE OF A HOUSE. By T. M. Clark. New York: The Macmillan Company. 1903.

Mr. Clark's book is distinctly worth while; its purpose and scope are well expressed in its sub-title: "A volume of suggestions to householders, housekeepers, landlords, tenants, trustees, and others for the economical and efficient care of dwelling houses." The book covers a range of topics not covered by any other publication, and it is filled from cover to cover with admirable advice, helpful suggestions, keen observations, and useful knowledge of the best kind.

The opening chapter on "How a house is built" is perhaps the one part of the book that appeals least to the non-technical readers for whom the work is intended, yet it is obviously necessary to the author's scheme, and is most useful in itself, since it explains fundamental principles and conditions needful to a clear understanding of what follows. The various parts of the house are then taken up in rapid succession, with chapters on the roof, chimneys and fireplaces, stoves and furnaces, the kitchen stove, furnaces—and information on this point can never be too definite or too precise—steam and hot water heating, plumbing, troubles with plumbing and their remedy, gas pipes, and gas fixtures, electrical fixtures, the care of woodwork and keeping a house in repair. The whole subject of building economy from the point of view of utility and occupancy is thus admirably covered. The suggestions are most helpful; the descriptions are plainly given in clear language, and the whole book is admirably conceived and admirably carried out. It does not treat of esthetics, but it treats of the practical side of house building and housekeeping in a distinctly original and valuable way. It is a pleasure to commend so useful a volume.

HOMES AND THEIR DECORATION.

HOMES AND THEIR DECORATION. By Lillie Hamilton French. New York: Dodd, Mead & Co. 1903. Pp. 430. Price, \$3.00 net.

Miss French has produced an entertaining book that will be found very helpful by the women to whom it is addressed. It is admittedly a woman's book, written for women. The author tells us that many years of her life have been spent in answering questions on home decoration addressed her from every conceivable quarter, and she naturally claims to have an idea of what people are looking for and what they need.

The book makes no attempt to treat the house as an architectural problem, nor does it deal with architectural questions. The value of plan, proportions, dimensions, situation, and other architectural questions, are not ignored, it is true; but the point of view is rather, given the house, how shall it be made beautiful, homelike, and hospitable? Miss French never loses sight of the guest or visitor; she decorates and adorns rather for the people without the house than those within it. In this she unquestionably misses the true home sense, since those who use the house most are those for whom it should be decorated. She thoroughly advocates the parlor, since, we are told, the mistress of even the smallest house will receive friends and must have a place in which to entertain them. The logic is good, but the practise is not always to be commended—unless Miss French be taken as a guide.

And she is no uncertain one. Her views are positive and direct. She knows exactly what to do and how to do it. And on the whole most of her advice is good and sound; it is always suggestive and generally helpful, and it certainly leaves the reader in no doubt as to what she should do. Her views are guided by good taste and are the results of wide experience; not always infallible, she is an excellent cicerone.

The book treats of every part of the house except the nursery, which does not appear to have special treatment. Even the kitchen and the bathroom, apartments ordinarily not considered within the scope of decorated rooms, are treated at some length. Special features, such as windows, floors, fireplaces, and verandas, are considered at length. The sideboard has a special chapter, and questions of lighting, picture hanging and framing, the decorative possibilities of plaster casts, writing tables and pianos, divans and making over furniture all have their place and are each treated at some length. As a whole the book is one of the most complete and exhaustive that has appeared from the American press. It is well printed and amply illustrated by means of half-tones and line drawings. The latter do not always bear a direct relationship to the text, but as many of them are examples of old furniture—often very good—they add much to the interest of the book.

CLASSIC THEATER AT BERKELEY, CAL.

The open air theater, recently completed on the grounds of the University of California, is a structure quite unique in the equipment of New World educational institutions. Climatic conditions at Berkeley are of so rare a nature as to permit the assembling of outdoor audiences at any season of the year. The site chosen is the declivity of the mountain which rises directly back of the University in a dense grove of eucalypti, which incloses it on every side and affords retirement from all distraction, as well as sheltered from the ocean winds, which blow with peculiar regularity in all months of the year. The theater is the gift of Mrs. Phoebe A. Hearst. The designs follow the amphitheater at Epidaurus more nearly than that of any built in classic times, and is composed of a "Logion," or stage, and auditorium, corresponding to the "Theatron" of the Greeks. The former is enriched by a complete classic order of Doric columns and entablature, the ends of the side walls toward the auditorium forming two massive pylons, each pierced by entrances, these being from the rear.

The auditorium is 254 feet 8 inches in diameter, divided into an inner and outer circle, the two being separated by a wall 4 feet in height. The central pit, corresponding to the orchestra, is 50 feet 8 inches in diameter. The inner circle consists of twelve rows of steps, 6 inches in height, rising 5 feet 5 inches above the pit, and will be occupied by temporary seats, which will accommodate 1,454 persons. The outer circle consists of twenty-one rows, or steps, each having an elevation of 1 foot 6 inches, divided by eleven aisles 3 feet in width, and seating 4,228 persons. Surrounding the extreme outer circle is a path which will ultimately be covered with a colonnade. The total elevation of the outer circle is 37 feet 11 inches above the pit. The extreme width of the stage is 146 feet 10 inches, with depth of 33 feet, height of stage floor above the pit 5 feet 5 inches, and total height 40 feet 8 inches. Later it is intended to surmount the stage by a double colonnade.

The material throughout is concrete, of which 100,000 cubic feet were used. In excavation 10,000 cubic yards of earth were removed. The total seating capacity of the amphitheater is 6,914. Since its completion the theater has been the scene of performances of classic plays and other exercises, and has proved to be admirably adapted to the purpose for which it is designed. Acoustically the structure is perfect.

The plans of this meritorious structure were drawn by John Galen Howard, supervising architect of the University buildings. (See illustration on page 126.)

AN OLD ROMAN GARDEN AT PHILADELPHIA.

MR. J. H. A. KLAUDER, who resides at No. 1513 Allegheny Avenue, Philadelphia, has developed a new type of Italian garden in America by undertaking a reproduction of an old Roman garden, illustrations of which are reproduced on page 123. His house, while well within city limits, is surrounded by ample grounds, and here he has set up a considerable and valuable collection of old works of art brought from Italy expressly for the adornment of the garden.

The owner of this interesting garden has abandoned the usual type of an architectural garden, in which pergolas and terraces, walls and steps, and other architectural features are constructed by the contemporary architect in a style more or less modern, and has contented himself with forming a large collection of actual antiques, many of which have a pedigreed history, and disposing them in his garden in a way which not only displays them to advantage, but distinctly and happily recalls the gardens of old Rome.

Hence the spacious green lawn is bordered with a series of columns, each of distinct individuality and of rare artistic interest. These are surmounted with busts. In the background is a pierced Venetian parapet or balustrade, the treasure-trove of an ancient palace; it is twenty-eight feet long and five feet high, and is one of the most remarkable and unusual pieces of genuine Italian architectural sculpture in this country. A marble statue, "The Crouching Venus," stands before it, and on either side is a fine old Venetian well head. The other decorations include statues of Bacchus and Ariadne, marble figures from old sarcophagi, busts of Diana, Tiberius and Nero, and fine old marble seats.

THE London municipal authorities condemn "slum" quarters, tear down the rookeries and rebuild model houses. The city in this manner has reboused in eight different localities about 26,000. Also the London Peabody Trust has housed 19,000 people and another company 20,000. Private companies keep in touch with the modernizing of this great city, having built over 24,000 model houses. Most of these private company structures are small and intended for one family, such as the terrace houses, cottages, and villas, with the rest running into larger buildings, such as double houses and flats. Many of the smaller model houses have bay windows, Venetian blinds, tessellated forecourts, iron gates and railings, good little gardens.



New Books

FIREPROOFING.

CATALOGUE OF THE NATIONAL FIREPROOFING COMPANY OF PITTSBURGH, U. S. A. By Henry L. Hunton. New York: National Fireproofing Company. 1903. Price, \$3.00.

Offered as a catalogue of commercial products—and but a preliminary and partial catalogue at that—this book is a storehouse of information on matters relating to fireproofing. Written and compiled by a competent engineer, it is a practical handbook of its subject, which is one of the most important in the building industry.

ROOF FRAMING.

ROOF FRAMING MADE EASY. By Owen B. Maginnis. Second edition. New York: The Industrial Publication Company. 1903. Pp. 164. Price, \$1.00.

It is a pleasant tribute to the practical value of Mr. Maginnis's book that a second edition of a technical handbook like this should be called for. It aims to present a practical and readily comprehended system for laying out and framing roofs, and the explanatory text is illustrated with nearly a hundred engravings. The author treats of almost every kind of roof, including several complicated and unusual combinations. The book is a practical treatise dealing with an important subject in a practical manner.

THE WOODLOT.

THE WOODLOT: A HANDBOOK FOR OWNERS OF WOODLANDS IN SOUTHERN NEW ENGLAND. By Henry Solon Graves and Richard Thornton Fisher. Washington: Government Printing Office. 1903.

This valuable handbook, issued by the Department of Agriculture, while intended primarily for southern New England, is brimful of suggestions for wood owners in almost every part of the United States. Its purpose is to show how second-growth woods should be treated in order to yield larger returns in the long run than are possible under present methods. It does not purport to make foresters, but it undertakes to show the principles of woodlot forestry to men who already understand something of the nature and habits of trees. The pamphlet tells what may be done to improve woodlots, and how to do it. It is illustrated with photographs and diagrams, the latter showing good and bad growths of trees in good and bad combinations. It is obviously one of the most useful publications recently issued from the Department of Agriculture.

MEASURING WOODWORK.

HOW TO MEASURE UP WOODWORK FOR BUILDINGS. By Owen B. Maginnis. New York: The Industrial Publication Company. 1903. Pp. 79. Price, 50 cents.

This useful little book undertakes to describe the simplest and most accurate methods to be followed when figuring up all the woodwork required for brick or frame houses. The subject is treated in ten chapters, each amply illustrated with drawings and diagrams. The text is simply written, the statements clear and precise, and the book will be found an excellent text book by those desiring concise information on the subject of which it treats.

HOME BUILDING AND FURNISHING.

HOME BUILDING AND FURNISHING. By William L. Price and W. M. Johnson. New York: Doubleday, Page & Co. 1903. Pp. 193 + 140. Price, \$1.00.

This book is a combined edition of "Model Homes for Little Money," by Mr. Price, and "Inside of One Hundred Homes," by Mr. Johnson, originally published as separate works. The present edition is not well made, as the pagination is not consecutive, and several pages are omitted after page 194. The material forming the book originally appeared in the Ladies' Home Journal. The publishers are entirely justified in their contention that the book is full of ideas; for it is very amply illustrated, and many of the illustrations are novel, interesting, suggestive, and helpful. That all can not so be described is a fault inherent to works of this description; it is sufficient that there is much good here and much of interest.

Of the text it is sufficient to point out that Mr. Price's share of the volume is by far the more interesting and the more suggestive. Much that he has to say is wise and helpful, and he speaks with the authority of one of the most successful practitioners in domestic architecture. Mr. Johnson's contributions to the book are chiefly descriptions of the illustrations he presents. These are all on a small scale; but, rightly used, the book can be most stimulating.

New Building Patents

The following list of New Patents relating to Building and Sanitary Science is prepared expressly for the SCIENTIFIC AMERICAN BUILDING MONTHLY by MUNN & Co., Solicitors of American and Foreign Patents.

A PRINTED COPY of the specification and drawing of any patent in this list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, if exact date or number is furnished. Remit to MUNN & Co., 361 Broadway, New York.

BRICK, STONE, AND TILE.

METAL ROOFING TILE OR SHINGLE. A. Friedley, Chicago, Ill. October 6	740,842
CONCRETE OR CEMENT BUILDING BLOCK. J. H. Jones, Portland, Ohio, October 13	741,040
BUILDING BLOCK AND WALL. F. E. Kidder, Denver, Colo. October 20	742,094
HOLLOW TILE. C. K. Mitchell, St. Joseph, Mo. October 27	742,709

CARPENTRY.

WINDOW SASH. E. Wadey, Los Angeles, Cal. October 13	741,197
WEATHER STRIP POSITION. T. Sash, Chicago, Ill. Astoria, N. Y. October 13	741,415
COMBINED WINDOW AND SCREEN. P. M. Barnes, Lockport, N. Y. October 13	741,441
WINDOW. F. J. and H. G. Carl, Chicago, Ill. October 13	741,457
PANEL WORK OR WINDSCOTING. D. P. Miller, Cumberland, Md. October 13	741,524
CASEMENT WINDOW. H. C. Smith, Boston, Mass. October 13	741,560
JOINING CARPENTERS' AND JOINERS' JACK. W. T. Seely, Erie, Pa. October 13	741,562

CONSTRUCTION.

METAL CEILING. A. Friedley, Chicago, Ill. October 6	740,843
SWINGING WINDOW. E. Van Noorden, Boston, Mass. October 6	740,954
BUILDING CONSTRUCTION. T. Sash, Chicago, Ill. October 13	741,066
CORNER STRIP. F. L. Union, Chicago, Ill. October 13	741,288
FLOORING AND METHOD OF CONSTRUCTING FLOORS. F. L. Union, Chicago, Ill. October 13	741,289
COMPOSITE GIBBER OR THE LIKE. G. A. Weber, New York, N. Y. October 13	741,421
METALLIC FINISH FOR BUILDINGS. N. Poulsen, Brooklyn, N. Y. October 13	741,545
CEILING CONSTRUCTION. W. D. Ryan, Mass. October 13	741,593
EAVES THROUGH HANGAR. Adams and Mulvey, Ashtabula Harbor, Ohio. October 27	742,371

ELEVATORS.

SAFETY APPLIANCE OR ATTACHMENT FOR ELEVATORS. G. Holger, Chicago, Ill. October 6	740,566
DEVICE FOR LOCKING ELEVATORS. D. C. Jenkins, Elmhurst, Pa. October 6	740,570
DEVICE FOR OPENING AND CLOSING ELEVATORS. H. M. Jenkins, Allegheny, Pa. October 6	740,569
ELEVATOR. F. D. Foster, Linden, N. J. October 20	741,827
ELEVATOR MECHANISM. J. Dillon, Milwaukee, Wis. October 27	742,173
SAFETY DEVICE FOR ELEVATOR. F. Wilson, Parkersburg, Pa. October 27	742,542
ELEVATOR SAFETY DEVICE. W. & J. Floss, Meadowlands, Ind. October 27	742,621
OPERATING DEVICE FOR ELEVATOR CARS. P. F. Foley, New York, N. Y. October 27	742,623

FIREPROOFING AND FIRE EXTINGUISHMENT.

AUTOMATIC FIRE ALARM AND SPRINKLING SYSTEM. E. K. Ludlow, Chicago, Ill. October 6	740,450
FIREPROOF FLOOR CONSTRUCTION. E. Merrick, Elizabeth, N. J. October 13	741,054
FIREPROOF NAILING BRICK. J. T. Taylor, Houston, Texas. October 13	741,185
FIREPROOF STRUCTURE. N. Poulsen, Brooklyn, N. Y. October 13	741,544
ROLLING PARTITION. J. McWorkman, Indianapolis, Ind. October 20	741,698
FIREPROOF CONSTRUCTION. C. H. Scammell, New York, N. Y. October 20	741,934
METHOD OF CONSTRUCTING FIREPROOF PARTITIONS. Lyon and Berle, Washington, D. C. October 20	742,045
FIREPROOF CONSTRUCTION. Willough and Smith, New York, N. Y. October 27	742,811

HARDWARE.

COMBINED LOCK AND LATCH. A. M. Doyle, Leoti, Kan. October 6	740,826
WINDOW SASH. S. Grady, Buchanan, Va. October 20	742,020
LOCK. Nelson and Wood, Reynolds, Ind. October 20	742,052
WINDOW FASTENER. W. D. Watson, Chicago, Ill. October 20	742,090
SASH LOCK FOR WINDOWS. C. Hoskyris, Bradford, England. October 27	742,658
SASH FASTENER. F. G. High, Los Angeles, Cal. October 27	742,787

HEATING AND VENTILATION.

VENTILATOR. W. F. Slack, Wellington, N. Z. October 6	740,598
RADIATOR. J. Kelly, Chicago, Ill. October 13	741,404
VACUUM HEATING SYSTEM. G. H. L. Stevens, Chicago, Ill. October 13	741,548
HEAT REGULATOR. Aldrich and Grange, Milwaukee, Wis. October 20	741,610
RADIATOR FOR HEATING BUILDINGS. D. Sinclair, Coalbrookdale, England. October 20	741,845
HOUSE VENTILATING DEVICE. F. B. Moore, Metamora, Ill. October 27	742,470
SHEET METAL RADIATOR. W. R. Kinneer, Columbus, Ohio. October 27	742,672, 742,673, 742,674

MISCELLANEOUS.

SCAFFOLD. M. A. Cheves, Marshall, Texas. October 6	740,398
SCAFFOLD BRACKET. W. Michael, Marion, Ind. October 6	740,452
VAULT LIGHT CONSTRUCTION. W. L. Caldwell, New York, N. Y. October 13	741,010
PAINTERS' HOSE. J. Hammarstrom, Bridgeport, Conn. October 27	742,417

PLUMBING.

WASTE AND VENT SYSTEM. J. L. Fruin, New York, N. Y. October 6	740,412
PLUMBERS' SANITARY CROSS. J. L. Fruin, New York, N. Y. October 6	740,413
WATER CLOSET. Knapp and Rollins, Stoneham, Wis. October 6	740,662
OVERFLOW ATTACHMENT FOR SINKS. J. L. Fruin, New York, N. Y. October 6	740,737
FLUSHING TANK. W. A. Williams, San Francisco, Cal. October 13	741,203
SUPPLY VALVE. W. T. Nichols, Hempstead, N. Y. October 13	741,534
WATER CLOSET. J. L. Fruin, New York, N. Y. October 20	741,910
WATER CLOSET. A. Ek, Portland, Me. October 20	742,014

HOUSES IN IRELAND.

A PAPER on "The Housing of the People of Ireland during the Period of 1841-1901" was read by Mr. R. E. Matheson, Registrar-General, at a recent meeting of the Statistical and Social Inquiry Society. It stated that during the sixty years there was a gradual reduction in the number of houses from 1,328,839 to 858,158. There was also a great alteration in the relative number of houses. Thus, mud cabins, which in 1841 numbered 491,278, fell to 9,873 in 1901. In considering this decline it should be borne in mind that a large portion of the decrease was due to emigration. Houses of a somewhat better class also showed a considerable falling off, while second class dwellings or good farm houses gradually increased from 264,184 to 521,454, and first class houses of a better description than the preceding rose from 40,080 to 75,225. As to house accommodation in the whole of Ireland, he said in 1841 the number of families having only fourth class accommodation formed 42.46 of the total families in the country, and in 1901 the percentage was only 4.53. The percentages of third class accommodation respectively were 39 and 31.64. In the second class the figures were 16.41 and 56.37, while in the first class the figures were 2.13 and 7.46 respectively. Dealing with one-room tenements, he said of the 59,265 families in Dublin 21,747 were located in one-room tenements, or 36.70 per cent. The percentage in Belfast was 1; Cork, 10.62; Londonderry, 7.15; Limerick, 15.80, and Waterford, 7.28. Comparing Dublin with other big cities it was found that the number of persons in one-room tenements with five or more occupants in every 100 of the total population was: Dublin, 10.61; Belfast, 0.10; London, 0.70; Liverpool, 0.24; Manchester, 0.05; Edinburgh, 2.33; Glasgow, 5.24. In conclusion, he said that the material improvement in the housing of the people of Ireland since 1841 was very satisfactory, but there was still much to be accomplished. The substitution of modern laborers' cottages in the rural districts for mud cabins and the erection of artisans' dwellings in some of the larger urban districts had done much to provide suitable habitations for the people, but the statistics of tenements of one room showed that in many parts a considerable proportion of the population were still exposed to the evils resulting from overcrowding. It was gratifying to know that the subject was attracting earnest attention in Dublin, where great good had been effected through the princely munificence of Lord Iveagh.

SCOTCH BEEHIVE HOUSES.

MR. THOMAS ROSS, this year's Rhind lecturer in connection with the Society of Antiquaries of Scotland, in his first lecture of the course on "Secular Buildings Erected in Scotland from the Earliest Period of the Seventeenth Century," said there are probably no remains of pre-Roman dwelling-houses in Scotland. There is, however, evidence of great tomb structures, and the opinion is probably well founded that these latter are a reflex of the houses, and, although the dwelling-houses have thus perished, it is quite possible and highly probable that they survive in modern instances in remote places. The earliest surviving type of human habitation built of stone is probably the "beehive" house, of which there are several examples in the western islands. They are of small size, seven feet or eight feet in diameter, and of a height sufficient to stand upright within, access being obtained by creeping in by the small doorway. The principle of their construction is good, so that these houses were likely to be enduring. At Howmae, North Ronaldsay, there is a complicated plan of two houses, with separate cells, a workshop, and two places for cattle, some thirteen places in all, of the most complicated and irregular plan. These have all a uniform construction, built on the surface of the ground, and with stones, without lime or cement, and having converging walls and roofs of stone slabs. The entrance doorway and passage were so confined as to necessitate stooping.

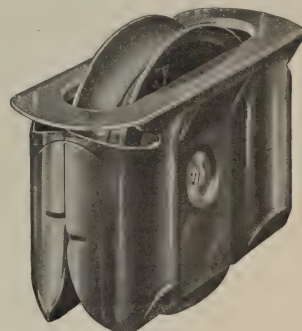
THE HOUSE OWNER AS CITIZEN.

THE mechanic who builds a house, sends his children to school, and otherwise identifies himself with a community of good people, has an important advantage over the one who comes to-day and may go to-morrow. He becomes a citizen, a neighbor, and a friend, where before, even though a good mechanic, and well thought of, he had no particular standing in any community. His better situation makes better opportunities for his children. Identification with a community and its people always makes a better condition for any family. It is rare that a workman needs charity or any kind of free help. Make for him a fair opportunity and good security for his savings, show him the opportunities, convince him that they are safe, then give him friendly encouragement, and the chances are he will succeed. But to do so he must be left perfect freedom to undertake something according to his own tastes.

Publishers' Department

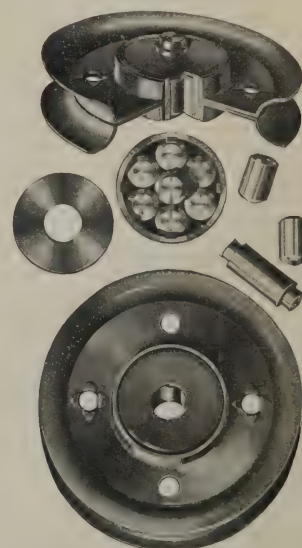
ROLLER BEARING SASH PULLEYS.

THE illustrations which accompany this article show the only steel sash pulley made with an axle. This all-steel roller bearing sash pulley is called the "Grand Rapids," and it is manufactured and just placed on the market by the Grand Rapids Hardware Company. The first engraving represents the No. 110 sash pulley, with a two-inch wheel. To mortise it in the wood, simply bore three one-inch holes in line, centers three-quarters inch apart, or bore mortise with the "Grand Rapids" triple bit No. 11, or mortise with any pulley



SASH PULLEY.

mortiser using one-inch bits, cutting mortise $2\frac{1}{4}$ inches long. No counterboring is necessary, as the face plate does not have to be let into the wood, and the mortise is finished when the holes are bored. No nails or screws are needed, no time is wasted in fitting, and every pulley is of a standard size. This roller bearing pulley will carry more weight than any sash cord will support, and runs smoothly and noiselessly. The second engraving shows the roller bearing wheel and parts of an unsurpassed type of sash pulley construction. Six steel rollers one-quarter inch in diameter run on a solid steel axle of the same diameter, and making a bearing that no amount of wear can affect in the least. It is guaranteed to carry any window made. These pulleys are furnished regularly in polished natural steel, but on special order they can be supplied in gun metal or plated brass, bronze or antique copper.



ROLLER BEARING WHEEL.

The firm, we understand, will be glad to send samples and give information to any one interested. The Grand Rapids Hardware Company, and Grand Rapids Sash Pulley Company, also manufacture the "Grand Rapids" No. 1 Post Boring Machine. It can be set on a post and used for general work as well as for running quadruple or triple bits. It is a well made ma-

chine, has tight and loose pulleys, $3\frac{1}{4}$ by 7, which should run about 600 revolutions per minute. The apparatus is equipped with a belt shifter and an adjustable stop for depth of hole. It also has an adjustable counterbalance or lever. It is very easy for any one to arrange a simple front treadle for bringing down the vertical spindle if such a device is wanted. The spindle has a half-inch straight hole, in which bits are fastened. The address is, Grand Rapids, Mich.

TEST OF ROOFING.

We have just received from the Standard Paint Company, of New York and Chicago, which manufactures the well-known "Ruberoid Roofing" and the "Giant and P & B Products," a piece of "Giant" insulating paper which has been in use in the building of the Arctic Ice and Cold Storage Company, at Buffalo, N. Y., for over thirteen years. We have examined the specimen carefully, and also compared it with unused "Giant" material, and find that it is still in practically as good a condition as when new, being soft and pliable and showing absolutely no signs of deterioration. This pliability indicates the unusual value of this paper for building and sheathing purposes, especially as it can be bent easily into corners, against walls, ceilings, and floors, without danger of cracking. The "Giant Papers" are thoroughly saturated with the celebrated "Giant Water-Proof and Acid-Proof Compound," manufactured solely by the Standard Paint Company, and the fact that it has not oxidized after all these years of service speaks very favorably for its lasting qualities. The paper is a tough, strong stock of fine quality, non-porous and thoroughly airtight. The "Giant Insulating and Sheathing Papers" have been standard products of the Company for eighteen years and have sufficiently demonstrated their enduring properties. They are used by prominent architects throughout the world with general satisfaction. The Company's offices are at No. 100 William Street, New York, N. Y.

WINDOW DECORATION.

A PERFECT reproduction of a stained-glass window has been made and successfully placed on the market for many years by the manufacturers, McCaw, Ste-

moisture, remains intact wherever laid, and is especially useful in decorating churches which can not afford the genuine stained-glass. The accompanying illustrations show designs in window decorations.



DECORATION.

"Glacier" and "Secotine" are supplied to the United States and Canada by the company's importing agent, George Quail, No. 396 Broadway, New York, N. Y.

THE GROWING USE OF ZINC WHITE.

THE annual production of zinc oxide, commonly known as "zinc white," has increased in the United States during the past decade from about 25,000 tons to considerably more than 50,000 tons. Most of this material is used as a pigment in the manufacture of paints, and the increase must indicate either a vast expansion of the painting industry or a growth in the proportion of zinc oxide utilized. That the explanation lies in the former rather than the latter supposition is proved by the fact that in the same period the annual production of the alternative pigment, white lead, has increased less than 25 per cent.

The reason for this disproportionate growth is to be found in the growing acquaintance of the paint using public with a comparatively new substance, including greater knowledge of its technic among paint manufacturers and greater familiarity with its qualities among architects and painters. There has long been a marked prejudice, well or ill founded, among those who govern the selection and application of paint, in favor of "straight" white lead—that is, lead

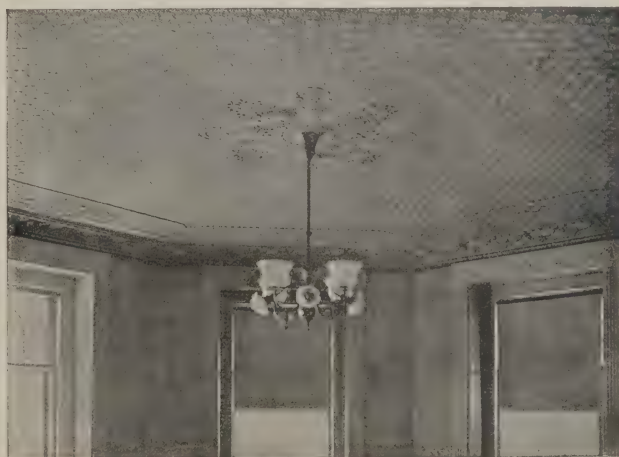
uncombined with other white pigments. The fact that this pigment is not, and that the other is, fitted for use in quarters where hydrogen sulphide is found first indicated zinc white as the preferable pigment for domestic interiors. Such use gradually familiarized the users with its merits, and the paint manufacturers, who have unhesitatingly adopted it in large quantities to improve their products, have put it into common and general use for all purposes. The economy, beauty, and excellence of these compound paints have been a continuous demonstration of the utility of zinc white.

Architects are, of necessity, conservative, and the selection of paint is but a minor detail in their profession. Painters, as a class, are not only conservative, but reactionary, hence they cling in general to the familiar usages of the past. But for these deterrent influences doubtless the use of zinc paints would have grown more rapidly. But the potent facts of competition are doing their usual work: if the ready mixed paint, convenient and economical as it is, proves by ocular demonstration the superiority of paints containing zinc, the architect is compelled to consider the reasons therefor and the painter to overhaul his fixed beliefs. If the reason for the virtues of the best combination paints be traced to their content of zinc white, zinc white will gradually force itself to the notice of paint users.

This is what has been occurring and is still in progress. The consumption of zinc white has merely kept pace with the growth of familiarity with it among those who use paint. Zinc white is manufactured by The New Jersey Zinc Company, No. 11 Broadway, New York, N. Y., and the economical and durable qualities of this firm's oxide, together with its other merits, are recognized as contributing largely to the more than doubling of the zinc white output in the past ten years.

METAL CEILINGS.

IN placing a ceiling the best policy is to use a material which will secure durability, safety, ornamentation, and cleanliness. The various kinds of inner roofings have their advantages, but are almost certain to harbor some radical weakness, blemish, or menace that would be impossible in a metal covering. A steel ceiling can be put up as readily in a house already plastered as in a new building, and this decorative renovation can be more quickly performed in metal than in anything else, and with the satisfaction that it will stay in place as long as the building lasts. Stamped steel ceilings that embody the above requirements of modern town and country houses are manufactured by H. S. Northrop, No. 40 Cherry Street, New York, N. Y. This establishment has at hand many patterns desirable for residences and easily put up by local carpenters. For the hall, H. S. Northrop furnishes metal decorations consisting of copper wainscoting, with walls and the filling of the panels in stamped steel, painted, and a beam effect of plain sheet steel, grained in wood colors. For the dining-room, library, living and bedrooms, a ceiling of English design, or one of Colonial panels, or of small stamped patterns between wood or metal beams. For the kitchen and bath, as everything should be spotlessly clean, steel tiling, which can be put on and finished with enamel paint. There are four sizes of plain tilings, besides several of embossed design. For the parlor, as this is usually treated in the most delicate colors and furnished with everything light and graceful, the ceiling of the small, clean cut French pattern, as shown in the illustration, is the standard type kept in stock, but other styles are furnished if more agreeable. This one has a cornice, border, and centerpiece patterns all connecting to and matching the field pattern. The color should be a continuation in lighter shades of that on the walls.



PARLOR CEILING DECORATION.

venson & Orr, Limited, of Belfast, Ireland. Specimens that we have examined are certainly very beautiful, and we have information that the material is very valuable in contributing to a builder a good share of that art by which he enhances the cheerfulness and beauty of the various nooks and corners of his structures. The precise counterpart of a decorative window in appearance, color, and design of a stained-glass window is guaranteed by the manufacturers of "Glacier," as it is called. The product is prepared in transparent sheets and consists of a combination of gelatine and other materials, on which any ornamental design is stamped or printed in varied colors. These colors are permanent, rich, and substantial in character, and never fade out, so that the effect of an ornamental stained-glass window has its original integrity preserved. "Glacier" is very readily applied to existing plain glass windows by a special adhesive cement named "Secotine," that comes with it. Extremely durable, it will not chip off under heat or

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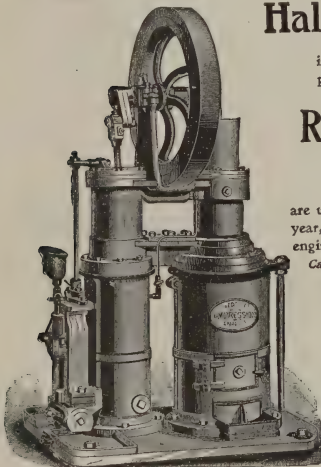
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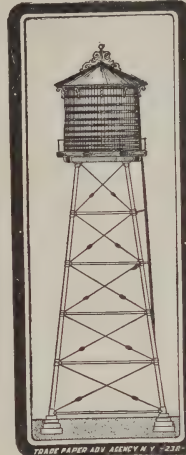
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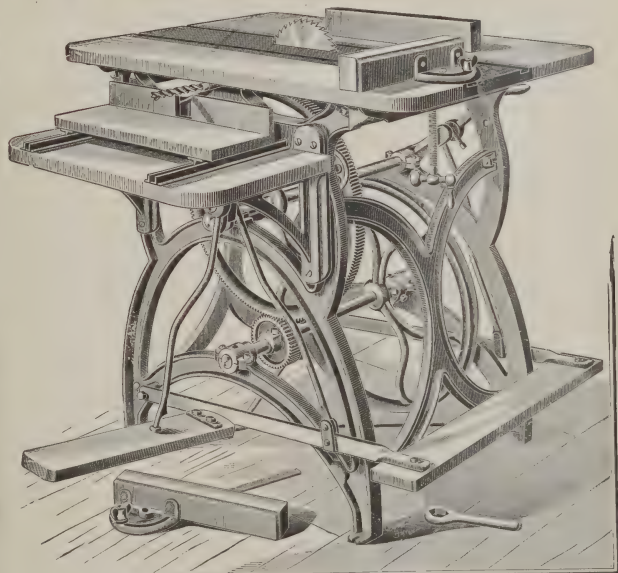
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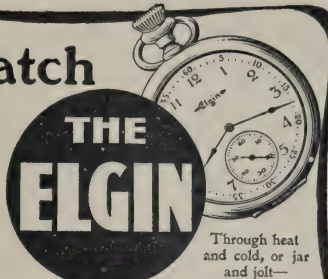
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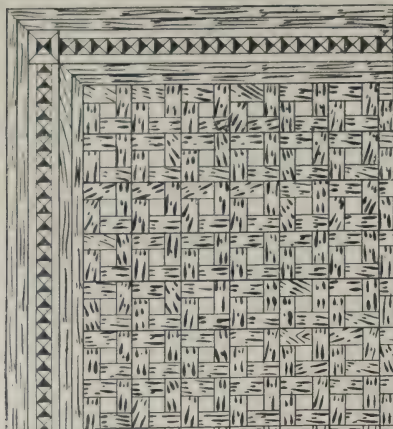
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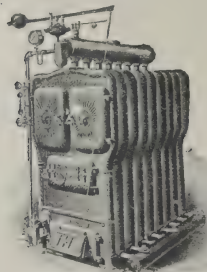
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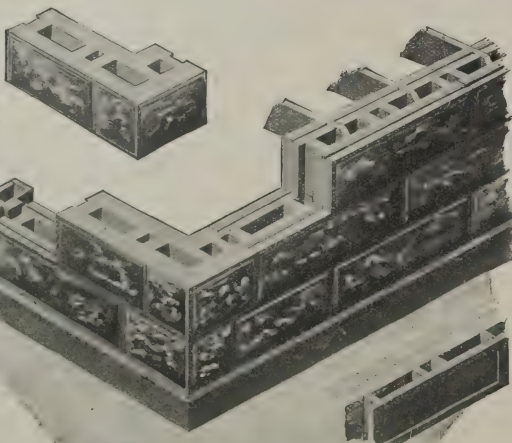
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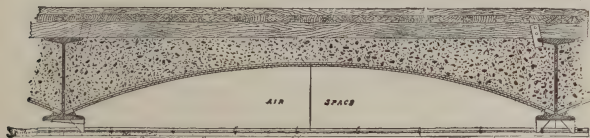
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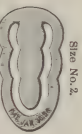
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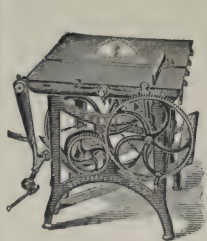
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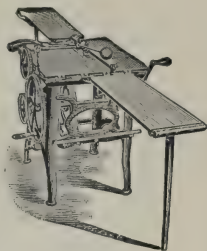
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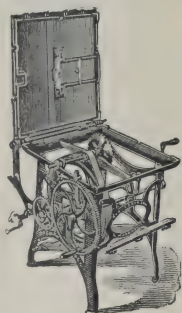
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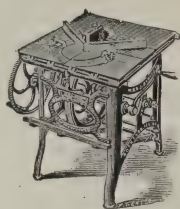
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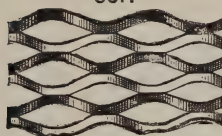
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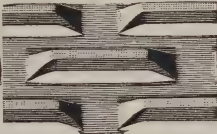


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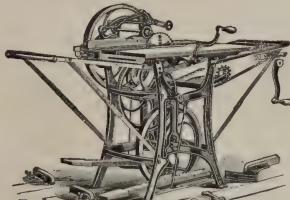
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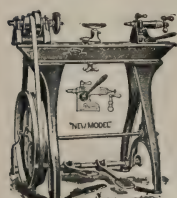
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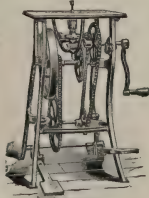
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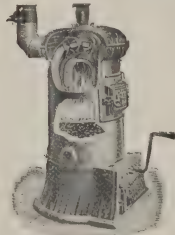
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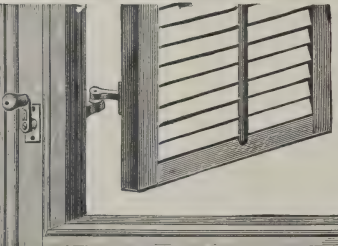
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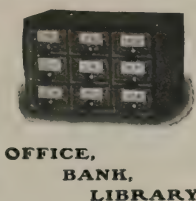
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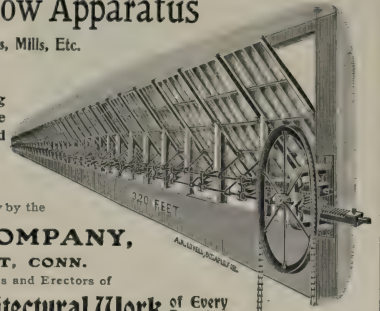
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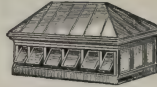
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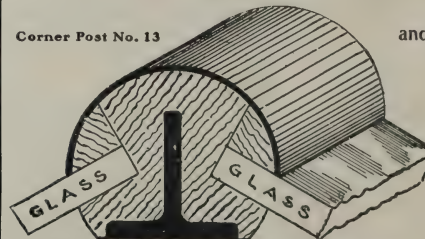
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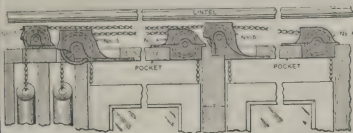
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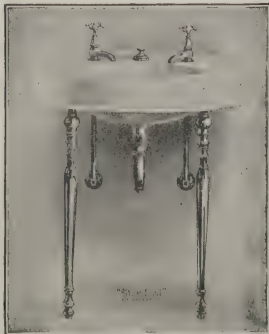
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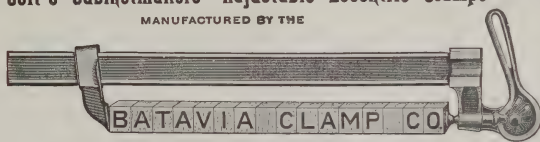
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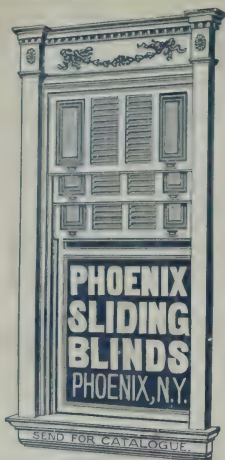


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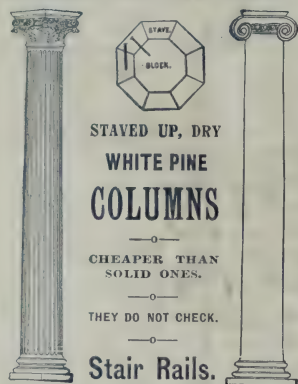
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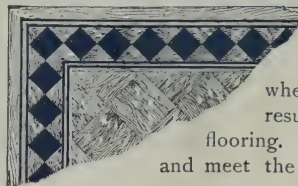
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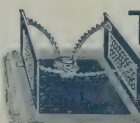
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